DOCUMENT RESUME

ED 142 323 PS 009 456

AUTHOR	Hertz, Thomas W.
TITLE	The Impact of Federal Early Childhood Programs on Children.
SPONS AGENCY	Department of Health, Education, and Welfare, Washington, D.C. Office of the Assistant Secretary for Planning and Evaluation.
REPORT NO	SA-11455-76
PUB DATE	Jul 77
NOTE	110p.
EDRS PRICE	MF-$0.83 HC-$6.01 Plus Postage.
DESCRIPTORS	Child Care; Child Development; Childrens Television; Cognitive Development; Community Involvement; *Compensatory Education Programs; Day Care Programs; *Day Care Services; Disadvantaged Youth; *Early Childhood Education; Emotional Development; Family Environment; *Federal Programs; Handicapped Children; *Literature Reviews; Minority Group Children; *Program Effectiveness; Program Evaluation; Social Development; Student Characteristics
IDENTIFIERS	Electric Company; Project Follow Through; Project Head Start; Project Home Start; Sesame Street

ABSTRACT

This paper reviews research findings concerning the effects on young children of major Federal programs in education and child care. It offers a summary rather than a detailed view of research on the impact of programs, and is based primarily on major program evaluation reports and research reviews. In addition, it draws upon a small number of individual articles and studies which provide supplementary evidence regarding the effects of intervention on children. The major programs examined are Head Start, Parent-Child Centers, Home Start, Follow Through, the Handicapped Children's Early Childhood Education Program, "Sesame Street," and "The Electric Comapny." The paper also examines the impact of day care experiences on young children, drawing on several recent reviews of research on day care (in general, not as part of a Federal program), prepared for the Office of the Assistant Secretary for Planning and Evaluation. Each section discusses a topic in relation to specific programs. Sections cover: short term and long term effects on children's cognitive and affective development; short and long term effects on non-cognitive outcome measures (socioemotional development, family change, community change); the effectiveness of curricula and treatment structure; assessment of program implementation; effects of parent involvement; effects of programs on children with different characteristics; and timing of intervention. (Author/SB)

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THE IMPACT OF FEDERAL EARLY CHILDHOOD PROGRAMS ON CHILDREN

Prepared for

The Office of the Assistant Secretary
for Planning and Evaluation, DHEW

Order Number SA-11455-76

PS009456

Thomas W. Hertz, Ph.D.

July, 1977

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Introduction

This paper reviews research findings concerning the effects on young children of major Federal programs in education and child care. It offers a summary rather than detailed view of research on the impact of programs, and is based primarily on major program evaluation reports and research reviews. In addition, it draws upon a small number of individual articles and studies which provide supplementary evidence regarding the effects of intervention on children.

The major programs examined are Head Start, Parent-Child Centers, Home Start, Follow Through, the Handicapped Children's Early Childhood Education Program, "Sesame Street," and "The Electric Company." The paper also examines the impact of day care experiences on young children, drawing on several recent reviews of research on day care (in general, not as part of a Federal program), prepared for the Office of the Assistant Secretary for Planning and Evaluation.

Relative to the amount of funds and effort expended on the development and delivery of Federal programs for young children, little has been allocated to the evaluation of their impact on children. Consequently, answers to questions about program impact must be pieced together from fragmentary findings, with the result that many questions cannot be answered at all, and most answers that can be provided must be considered as tentative and incomplete.

The first section of the paper addresses the issue of short-term impact. What is the immediate impact of a program on the children enrolled? While "short-term" can mean different things to different people, the basic issue concerns effects which emerge during the actual course of a program, and generally within a year or two after its initiation.

Whether or not children's gains are maintained, however, is another issue. Section 2 reviews findings pertaining to long-term program effects. Regardless of the presence or absence of short-term impact, do children enrolled in a program show any benefits or deficits (relative to comparable children not enrolled) several years or longer after the program's initiation? In many cases, at issue are effects which can be measured some time after the child has actually left the program. However, in the case of a program or combination of programs lasting for many years (e.g., Head Start and Follow Through) effects which occur during the course of the treatment also may be considered long-term.

As will become apparent in this report, most of the measures used to assess program effects concern the child's cognitive achievement and status (e.g., IQ). For a number of reasons, evaluators have less frequently examined changes in the child's socioemotional development, in the status and functioning of the child's family, and in community institutions and environment. Accordingly, Section 3 reviews available findings bearing on short- and long-term impact, as measured in non-cognitive domains, and thus supplements the first two sections.

These initial discussions of short- and long-term effects are limited to general findings which for the most part cut across different program sites, years, and samples. There are many factors, however, which determine a program's impact. Effects on children may vary as a result of differences in characteristics of the program, of the teachers and staff, of the surrounding environment and community, of the children's families, and of the children themselves. The last five sections of the paper examine research on some of these major factors and how they influence program outcomes.

The structure of intervention is dealt with in Section 4. Within a particular program or kind of intervention, which models work best? Are certain curricula, procedures, teaching styles, materials, etc. more effective than others? If so, are they more effective for all children, or particular kinds of children?

In order to adequately compare the effects of different models, however, we must be able to identify critical differences in the treatments. Even if the objectives and procedures of a program are clearly defined in advance (and in many models they are not), unless the actual implementations of the programs are measured well, it is difficult to draw conclusions about any differences which show up between two programs. For instance, if children gain equivalent amounts from two programs it may mean that the underlying models of intervention are equally effective, or that one is better than the other, but less fully implemented. Section 5 looks into the issue of implementation, and examines some of the problems that face evaluators who are trying to compare different treatment models.

The involvement of parents in programs for young children is seen by many as a way to augment and maintain children's gains. Section 6 reviews findings pertaining to parent involvement and its contribution to program impact.

The three sections outlined above concern the contributions of the programs, staff, and parents to the success or failure of intervention. Children also differ considerably, of course, in the experiences, skills, problems, and backgrounds they bring with them to a program. Section 7 considers evidence on the differential effectiveness of programs for various target groups, such as moderately and severely economically disadvantaged children, and boys and girls. Unfortunately, few findings are available

which bear on ethnic/racial differences in program gains, or on program effectiveness with two high-priority target groups--bilingual and handicapped children.

Finally Section 8 examines the timing of intervention as a factor in the magnitude of a program's impact. Are a child's benefits affected by: How old the child is when he or she is enrolled in the program? How long (e.g., how many weeks, months, or years) the child participates in the program? How frequently (e.g., how many hours per day, and days per week) the child participates? The degree of continuity between programs in which the child is enrolled at different times in his or her life?

As indicated earlier, complete and conclusive answers to the questions raised in these sections cannot be provided, due in part to a scarcity of pertinent data from research and evaluation studies. Furthermore, even when relevant findings are available, their implications are not always clear, primarily because of methodological weaknesses or limitations in the studies from which the findings are derived. Indeed, Seitz et al. (1976) argue that the vast majority of evaluation studies of intervention programs "have had such serious methodological shortcomings that they have been virtually uninterpretable in regard to evaluating either the short-term or the long-term effectiveness of intervention" (p. 1). Major methodological problems include: assessing the implementation of programs; selecting or developing adequate measurement instruments; establishing comparable treatment and comparison groups (e.g., through random assignment, or by controlling for important demographic and experiential differences); and minimizing attrition in the samples of longitudinal studies. (See Stebbins, et al., 1976, for a discussion of some of these problems as they affect Follow Through, and, for other discussions of methodological problems in evaluation in general, Anderson, 1973;

Ball, 1975; Bissell, 1973; Cooley, 1975; and McDill, McDill & Spreke, 1969.)

This paper looks at many large-scale programs in a relatively small number of pages. General findings and conclusions from major evaluations and reviews are summarized briefly. Lengthy qualifications of these summary statements are not feasible in this format, nor is there space to discuss many specific details of individual projects and studies. Unfortunately, it is difficult to simplify conclusions about program impact without also over-simplifying them.

One aspect of this over-simplification is to talk loosely about any differences favoring treatment groups over control groups as if they represented the gains originally anticipated by the program planners. Gains by these children are, after all, what these efforts are all about. In fact, differences between groups may not result from program experiences; analytical techniques can show statistical differences between treatment and control groups, without necessarily demonstrating change per se in the treatment group. This problem is aggravated by a tendency for the limitations and implications of the data analyses to be forgotten as the data and findings are summarized and filtered from one report to another. The reader must interpret program effects reported in this paper cautiously, since much of the information was obtained from final project reports which had to briefly summarize massive amounts of data, and in the process may themselves have oversimplified or distorted the nature and scope of their findings.[1]

On the other hand, a program may indeed have produced positive effects even though an evaluation failed to detect any. It may be that the "wrong" tests and measures were employed, or that the effects could not be teased out of the extraneous "noise" that characterizes research on social programs.

[1] Thanks go to Dr. Lois-ellin Datta, who in a critique of this paper called attention to the tendency of reviews such as this to overstate research and evaluation findings, and to indicate "gains" where in fact there is evidence only of statistical differences.

Misinterpretations and overly-liberal interpretations of data may be balanced to some extent by this conservative aspect of social science research.

At any rate, the findings reported in this paper rarely support definitive conclusions about program effects. The safest course is to consider most of them as current "best guesses" about what is happening to the children in these programs.

Not only do shortages of data and methodological weaknesses limit the scope of conclusions about the effectiveness of Federal programs for young children, those tentative conclusions which can be drawn are still subject to differing interpretations. For instance, is a statistically significant difference also socially or educationally significant? How much and what kind of impact must a program have in order to be considered a success? At this point particularly, scientific argumentation is supplemented or subsumed completely by social-political argumentation. Of course, "success" and "failure" are relative terms, and the outcome of a social action program is judged in the context of original intentions and expectations. What kinds of gains are expected? In which areas? How much of a gain? How soon? How long will they last? Small changes rather than large, in a few areas rather than many, do not necessarily constitute failure for a program. Indeed, time and time again in discussions, critiques, and defenses of Head Start and other intervention programs, the phrase "unrealistic expectations" (or its equivalent) crops up. But even if we modify our expectations, so that program outcomes are more likely to fall in line with them, disagreement over the value of programs will persist. Even if there is agreement that only small gains can reasonably be expected from a program, there is likely to be disagreement as to whether the program should go forward on this basis or be terminated. Furthermore, agreement on what constitutes a reasonable expectation for a

program is not in itself likely. For instance, many of those who argue that large changes in IQ should not be expected from compensatory education programs still hold out the possibility of significant gains in other domains of development, heretofore unmeasured. Others feel that we have given up "too early" in our assessment of impact and that we should look for program effects emerging later in life, especially in adolescence.

At any rate, issues not directly related to research are not dealt with in this paper. An effort is made to report findings "neutrally", without reference to judgments of success or failure, or to recommendations for action based on those findings.

The parting message of this introduction is two-sided. On the one hand, substantial information about Federal programs for young children is available, and it provides at least a partial picture of the effectiveness of these programs and some of their components. Even though much of the available evidence is tentative, and derived from studies with methodological shortcomings, many of the findings are useful and should not be ignored or dismissed. On the other hand, the narrowness and limitations of these data must be acknowledged. With respect to every question raised in this paper, there is need for more and better data. Furthermore, even the most robust of the findings which have been gleaned from program evaluations do not offer clear directions for future policy. One must beware of quick leaps from specific research findings to broad social policy implications. As indicated above, empirical data might (although they rarely do) suffice to resolve differences of opinion about what is happening in and as a result of social action programs. But no matter how complete and unequivocal the data might be, by themselves they do not indicate what should be done next. Such decisions can be (and should be) supported by research findings, of course,

but they must be based as well on social, political, and economic considerations which are not addressed in this review of research.

Section 1. Short-Term Effects

Head Start

One of the most publicized evaluations of the Head Start Program is the early study by the Westinghouse Learning Corporation and Ohio University, which evaluated the impact of Head Start (1968-1969) on the cognitive and affective development of children after they had left Head Start and were in the primary grades. The major child impact findings were that:

1. Summer Head Start programs did not appear to affect cognitive and affective development.

2. Full-year programs did not appear to change affective development, but did appear to produce changes on some measures of cognitive development.

3. Children who had been enrolled in Head Start were still below the national norms of standardized tests.

The Westinghouse study set the stage for subsequent evaluation of Head Start in several ways: It deflated hopes for large, long-term changes in performance on widely-used intellectual and social measures. It generated considerable controversy--controversy over the methodology of evaluating large scale social action programs, over the selection of measures, over the analyses of data, over the interpretation of data, over the philosophy of compensatory education, and even over the politics of science and social policy. Some of these issues will be taken up in later sections, but for the most part they are beyond the scope of this paper. They have been reviewed and arguments and counter-arguments aired in a variety of articles (e.g., see Passow, 1974; Westinghouse, 1973; White, 1970).

In spite of many disagreements which arose over such things as methodology and analysis, one general finding of the Westinghouse study was clear:

For the group as a whole, the Head Start experiences were associated with some changes, but they were few and small. This was only one study, however, and a few years of a program--early and presumably disorganized years in the program's development at that.

Further studies have followed the Westinghouse study, both on Head Start programs and on other, usually smaller-scale, compensatory education efforts. Even though a heterogeneous group of settings, philosophies, curricula, and children have been involved in these studies, and the findings have not all been similar, taken together the studies have indicated a basically positive picture of the immediate impact of compensatory education experiences on some aspects of child development. The Westinghouse study measured the effects of Head Start on children one to three years after the children had left the program. Other studies and reviews which looked at short-term effects generally found that both Head Start and other preschool programs produced increases in IQ scores and academic achievement, and less consistently, in attitudes, motivation and social behavior (Bissell, 1973; Bronfenbrenner, 1974; Gotts, 1973; Horowitz & Paden, 1973; Mann, Harrell & Hurt, 1976; Miller & Dyer, 1975; Passow, 1974; Payne et al., 1973; Rivlin & Timpane, 1975; Ryan, 1974; Weisberg, 1974; White, 1973.) Weisberg's (1974) examination of the data from the third year of the Head Start Planned Variation Study led him to the conclusion that: "In terms of a wide variety of cognitive skills, Head Start is effective in accelerating the growth rate of disadvantaged preschoolers." It is difficult to interpret these short-term changes, however, as we shall see when we examine the findings concerning long-term effects. In reviewing preschool programs and the major reviews of programs, White concluded:

> Most evaluations of preschool projects find an immediate increase in IQ scores. The reason for this immediate increase is not

> clear. It could reflect a genuine intellectual progress or it could reflect a familiarity with the situation, greater self-confidence, and an increased willingness to attempt problem solving in the test-taking context. (p. 185)

Follow Through

Findings concerning the short-term effects of Follow Through programs are similar to those reviewed above for Head Start. For instance, Bissell (1973) examined an evaluation of Follow Through Planned Variation and concluded that:

> Children in Follow Through showed slightly greater gains in school achievement during the 1969-70 school year than did their non-Follow Through counterparts. This was true for the entire sample, with the largest differences among Follow Through children whose families were below the OEO poverty line, children who also participated in Head Start, and children who received the full range of Follow Through services. Follow Through participants showed positive changes during the school year in their attitudes toward learning and school, and their growth in this area was slightly larger than that of comparison children at both grade levels. (p. 101)

Home Start

The Home Start program was found to be effective for children in several aspects of growth and development (Deloria, Coelen & Ruopp, 1974; Love, et al., 1976). Home Start children showed scores significantly higher than those of control children. During their first seven months in the program, Home Start children scored higher on three of four school readiness measures (the Preschool Inventory, the DDST Language Scale, and the 8-Block Child Talk Score). While the Home Start children's advantage was not as clear or complete at 12 months, it was maintained. On only one measure of socioemotional development did Home Start children score higher than controls at 7 months. After 12 months, however, ratings by mothers indicated that Home Start children had greater tolerance, and both mothers and testers rated Home Start children higher in task orientation.

Home-oriented intervention efforts other than Home Start also have been effective in producing gains in young children. Bronfenbrenner (1974) reviewed a number of intervention programs, and found clear evidence of initial gains by children enrolled in home-based programs. In a recent summary of evaluations of home-based early education programs, Hess (1976) concluded that most of the programs produced significant immediate gains in IQ scores. Children in comparison groups, without the benefits of these programs, showed no similar gains.

Parent-Child Centers

Parent-Child Centers (PCC), administered through Project Head Start, include education, health, nutrition, and social service components, which are delivered through center-based programs, home-based programs, or combinations of the two kinds. Thus, one would expect similar findings with respect to immediate, short-term effects. The scores of the Parent-Child Center children on the Preschool Inventory and the Denver Developmental Screening Test were compared with the norms for those tests, and with the scores of Home Start children prior to their entrance into the Home Start program. While the differences were not dramatic, the PCC children tended to obtain higher scores than children in the standardization sample and the Home Start sample. The evaluators of the program concluded that PCC's do improve the school readiness of children, "in terms of knowledge of the kinds of concepts which are expected of the child once he reaches school age." (Holmes, Holmes, Greenspan & Tapper, 1973, pp. 11-17).

Television Programs

The goals of "Sesame Street" include gains in the acquisition of basic facts and skills, such as recognizing and labeling letters and numbers, and

more complex cognitive skills relating to classifying and sorting, and to understanding the physical and social environment (Ball & Bogatz, 1970; Stein & Friedrich, 1975). Major evaluations of the first two years of "Sesame Street", undertaken by the Educational Testing Service, demonstrated positive short-term effects in most of these goal areas (Ball & Bogatz, 1970; Ball & Bogatz, 1971; Passow, 1974; Stein & Friedrich, 1975). It was found that in the first year, children who watched the program most frequently learned the most, and the most substantial gains occurred in letters, number, and classification skills.

> The major finding--that children learned more the more they watch --holds true across age, sex, geographical location, socio-economic status (SES), mental age (intelligence) and whether children watched at home or at school. In all eight goal areas in which children were tested, gains in learning increased steadily with amount of viewing (Ball & Bogatz, 1970, p. 4).

In the second year of "Sesame Street," when more extensive goals were introduced, the evaluators found significant gains in 13 goal areas (function of body parts, naming geometric forms, roles of community members, matching by form, naming letters, letter sounds, sight reading, recognizing numbers, naming numbers, counting, relational terms, classification, and sorting); less definite gains in 10 areas (naming body parts, recognizing letters, initial sounds, decoding, left-right orientation, counting strategies, number/numeral agreement, addition and subtraction, double classification, and emotions); and no effects in six areas (recognizing geometric forms, matching by position, alphabet recitation, enumeration, conservation, and parts of the whole). In none of the areas did non-viewers go ahead of viewers. "Sesame Street" viewers also gained more than non-viewers on the Peabody Picture Vocabulary Test, a standardized measure of oral vocabulary, which is used to measure mental age and IQ in young children (Ball & Bogatz, 1971).

In a subsequent evaluation of the ETS evaluation and a re-analysis of the ETS data, Cook et al. (1975) agreed that viewing "Ses me Street" teaches some letter, number, and relations skills, but concluded that the evidence examined "casts reasonable doubt about whether 'Sesame Street' was causing as large and as generalized learning gains in 1970 and 1971 as were attributed to the program on the basis of past evaluations" (p. 25). Ball & Bogatz (1975) in turn rejected the methods and arguments used by Cook and his associates, countering that they had adopted too conservative a stance for the evaluation of new programs.

An ETS evaluation of "The Electric Company", a program developed to improve reading skills in young disadvantaged children (first through fourth grades), also found evidence of positive effects in a variety of curriculum areas, and on a standardized reading test. (These findings applied primarily to second-grade children).

The Handicapped Children's Early Education Program

An evaluation was conducted by Battelle (Stock, et al., 1976) of the impact of the Handicapped Children's Early Education Program (HCEEP) in carrying out its goals of meeting educational needs of handicapped children aged 0-8 years. From 63 HCEEP programs which were in at least the third year of operation in the fall of 1974, 32 were selected for the evaluation. Most of the 130 children sampled fell into six categories of handicapping conditions (educable mentally retarded, trainable mentally retarded, learning disabled, emotionally disturbed, speech impaired, and deaf).

No control groups were assessed; the study was directed at determining whether there were gains above those expected on the basis of maturation. The evaluators concluded that the HCEEP program had positive effects in the

personal-social (e.g., self-concept, peer interaction), adaptive (e.g., self-dressing, personal responsibility), cognitive (e.g., memory, classification), and communication (e.g., discrimination, grammar/rules) growth areas, and possibly had positive effects in the motor area (e.g., muscle control, perceptual motor). The most substantial gains were found on the personal-social measures: "In this domain, the average gain in test scores from pretest to post-test was about 2.3 times greater than would be expected by age change (maturation) alone in the absence of project experience" (p. 10).

Day Care

In contrast to research on the effects of the children's programs reviewed thus far, research on day care has been prompted not only by desire to find ways to accelerate various aspects of the child's development, but also by concern that day care is harmful to the child's development (e.g., see Kagan, 1976, pp. 11-39). Consequently, research findings on short-term effects must be described in the context of two general questions: Does day care have deleterious effects on the child? Does day care have positive effects on the child?

With regard to the possibility of adverse effects on children, the available research findings can be stated succinctly: The evidence does not indicate that participation in a day care program (in contrast to staying at home) is harmful to the young child's development (Bronfenbrenner, Belsky & Steinberg, 1976; Kagan, 1976; Meyer, 1977; Ricciuti, 1976). Of course, ill-health or physical harm can be inflicted quickly by an unsanitary or dangerous physical setting. Substantial psychological harm appears to result, however, only from a severe, long-term (e.g., 5-10 years) situation in which the child is continuously deprived of all but minimal amounts of

social, intellectual, and physical stimulation, such as might occur if a child were institutionalized under extremely inadequate circumstances (Meyer, 1977, p. 3). On the other hand, it should be noted that most data on day care effects are derived from carefully planned and administered high-quality programs (Bronfenbrenner, et al., 1976; Heinicke & Strassman, 1976; Ricciuti, 1976), and the effects of low-quality day care on the child's cognitive and socioemotional development have not been studied to any significant extent. The focus of day care research has been restricted primarily to direct effects on the child, and for the most part has not included effects on the parents, on the family as a whole, or on the community and society (Bronfenbrenner et al., 1976). Furthermore, most studies of direct effects on children have touched on only a few areas of development--cognitive development as measured by standardized intelligence tests, the development of the mother-child relationship, and the development of relationships with other children (Bronfenbrenner, et al., 1976; Ricciuti, 1976).

With regard to the question of whether day care facilitates the child's development, recent reviews of day care research (Bronfenbrenner, et al., 1976; Heinicke & Strassmann, 1976; Kagan, 1976; Ricciuti, 1976) agree in their general conclusions. Day care programs for young children in general (i.e., children not characterized as economically disadvantaged or at risk) have produced no intellectual gains, or modest, temporary gains at best. More substantial short-term changes have shown up more often in studies of day care for children from low-income, low-education families. Experiences in high quality day care centers appear to prevent or attenuate declines in test scores often observed in this group of children. Furthermore, it has been reported that economically disadvantaged children have gained more from highly structured, cognitively oriented programs (Ricciuti, 1976).

That is,

> ...children reared in environments where the language skills and strategies tapped by the IQ tests are not encouraged seem to be helped by the practices of the middle class group care environment (Kagan, 1976, p. 50).

Section 2. Long-Term Effects

Head Start and Follow Through

As indicated above, the Westinghouse study initially dampened hopes for long-term substantial gain in intellectual functioning, due to Head Start intervention. Were subsequent programs and evaluations able to show larger, longer lasting gains? The answers available to date are mixed on this score.

In evaluations of the long-term effects of preschool intervention programs, a particular pattern has shown up time after time. Initial gains were made in various domains of functioning by children enrolled in the program, but these gains failed to persist into the primary school years. Bronfenbrenner (1974) describes the pattern in its extreme form:

> By and large, the experimental groups do not continue to make gains when intervention is continued beyond one year, and even more regrettably, the increases achieved in the initial phase, even the largest ones, tend to 'wash out.' In general, one year after intervention is terminated, the IQ of the 'graduates' begins to drop, the difference between the experimental and control groups gradually decreases, the once impressive gains are reduced to a few points, and, what is most crucial, the average IQ of the experimental group often falls back into the problem range of the lower 90's and below (p. 14).

This picture of early gains washing out, usually by the second or third grade, is attested to in many major reviews of the effects of preschool follow-up programs. (See Bissell, 1973; Bronfenbrenner, 1974; Rivlin & Timpane, 1975; Stanley, 1973; White, 1973.) It is also frequently referred to as "the catch-up phenomenon," since the rate of development during the post-intervention years is less for participant than for non-participant (control) children (Bissell, 1973, p. 65). Recent evidence of this pattern

was provided by a report on an experimental comparison of four preschool programs (incorporating 14 Head Start classes), which included a 3-year follow-up through second grade (Miller & Dyer, 1975). This study is noteworthy because it has been praised for its methodological strengths--e.g., children were randomly assigned to treatments, and treatments were monitored to obtain information on the implementation of program dimensions (Stevenson, 1975; White, 1975). The preschool programs produced immediate gains in IQ and achievement, especially for the more didactic programs, but the IQ and achievement test scores declined over the subsequent years.

The question about long-term effects of early childhood intervention programs cannot be answered unequivocally in the negative, however. For one thing, some evidence is available that gains in non-cognitive areas may be more easily sustained. Miller & Dyer (1975), who failed to find lasting cognitive gains, did find effects still detectable at the end of the 4-year period in a few non-cognitive areas, such as "inventiveness." Similarly, White (1973) cites findings of long-term advantages as measured by school attendance and promotion to higher grade levels. In addition, evidence that gains have been sustained in certain programs and for certain groups of children, in IQ, achievement, and social skills, has been reported in earlier reviews (Bronfenbrenner, 1974; Ryan, 1974; Zigler, 1973).

In contrast to the major national evaluations of compensatory education programs, which have yielded few findings of long-term cognitive gains, some studies of smaller experimental programs have shown more positive and longer lasting effects. Thus, the "'current wisdom' . . . that preschool programs for low income children boost IQ for a year or two but subsequently do not prevent it from falling back to around the original level," has been disputed recently (Murray, 1977, p. 1). Much of this more positive evidence

is generated by a number of studies which were initiated in the 1960's and recently organized into the Developmental Continuity Consortium. The Consortium, funded by the Office of Child Development through the Education Commission of the States, has enabled the principal investigators of these studies to pool their original data, and to collect comparable data on the current status of the children who had participated in the earlier intervention program. Good descriptions of the original studies and the recent efforts of the Consortium are available elsewhere (Hubbell, 1977a, 1977b; Lazar, Hubbell, Murray, Rosche & Royce, 1977; Murray, 1977).

In some of the original studies of the individual intervention projects included in the Consortium, the children enrolled in the programs scored higher on IQ tests than did control children, as long as three years after the programs (Lazar, et al., 1977). This was the case in some of the center-based programs, infant home-based programs, and combination center- and home-based programs. Analyses of current IQ and achievement test data for these children have not yet been completed.

The Consortium has also reported findings from preliminary analyses of two other indicators of the school performance of the children since leaving the experimental programs: (1) placement in special education classes, and (2) failure to be promoted from one grade to the next. Their data indicate that across a number of studies, the percentage of program children who later were placed into special education classes was less than the percentage of control children placed into special education (Lazar, et al., 1977). Similarly, in five of seven studies where data are available, program children were less frequently held back one or more grades in the schools they have attended since leaving the preschool programs, than were the control children. It should be noted that the differences between the program and control children

on these two indicators did not reach statistical significance in all of the studies.

Is it possible that positive effects will show up well after the third grade, even when no gains were discernible in the earlier primary years (perhaps because the measures used were inappropriate to the developmental processes in their early stages)? Evidence of positive effects of preschool programs well after intervention has been terminated, and as late as the fifth to seventh grades, has been reported in two recent studies (Palmer, 1976; Seitz, Apfel & Efron, 1976). In one case the intervention itself was continued beyond the preschool years through a Follow Through program, and in the other case it was not continued beyond the preschool level. In both of these studies the evaluators raise the question of "sleeper effects," since the effects are not simply maintained through the grades, but appear to increase after a certain point.

In sum, on the one hand, substantial positive effects of preschool intervention across the cognitive, social, and other developmental domains, are not consistently found beyond the early primary years, even when preschool programs are followed up by subsequent compensatory education efforts. On the other hand, some positive long-term effects have been found--if not across the board, at least with some studies, some groups of children, some curricula, some sequences of intervention, and some research strategies. Many of these specific contributing factors are considered in more detail in later sections of this paper. At any rate, at our present stage of research and development, it seems safest to accept the sobering message that dramatic gains that last are not easy to produce, but at the same time to acknowledge Palmer's (1976) claim that not all of the evidence has been presented yet, and that it is too early to ask the jury to reach a verdict.

Home Start

Home Start children were tested after 7 months and 12 months of involvement in the program. No subsequent follow-up testing was undertaken, so no evidence on long-term effects is available.

Hess (1976) reviewed eight home-based intervention programs which carried out follow-up testing, and found that all but one of these programs reported positive or significant differences favoring program children for lengths of time ranging from one to four or more years after the intervention was terminated. He concludes that the gains produced by the programs were maintained into the elementary school years with little fadeout. He also found that the children who had gained the most as a result of intervention lost the most subsequent to the end of the program, although the amount of loss was small relative to the original gain.

Parent-Child Centers

In the absence of long-term follow-up of the PCC children, evidence about the long-term effects of the programs is not available.

Television Programs

No data are available concerning the long-term impact of watching "Sesame Street" and "The Electric Company."

The Handicapped Children's Early Childhood Education Program

From the 32 HCEEP projects evaluated by Battelle (Stock, et al., 1976), 755 children graduated during the summer of 1974. The final report notes that the placement setting was known for 91 percent of these children, and that the HCEEP projects appeared to be effective in placing the children into more advanced educational settings. Of these children, 95 were followed up.

The teachers and therapists in the placement settings were interviewed, and when they were asked:

> to compare HCEEP graduates with non-handicapped children in their programs on social and cognitive behavior, the HCEEP graduates were judged, based on teacher perception, equal to or at a lower level than the non-handicapped children. However, when the placement setting teachers/therapists compared HCEEP graduates with similarly handicapped children who had no HCEEP experience, the HCEEP graduates were judged to be more advanced. Thus the HCEEP projects studied appeared to have a perceived positive impact on the social and cognitive behavior of their graduates (pp. 18-19).

Day Care

Almost all of the studies on day care concern the immediate effects of day care on children, measured while the children are actually enrolled in the program (Bronfenbrerner, et al., 1976; Heinicke & Strassman, 1976; Meyer, 1977; Ricciuti, 1976). Follow-up studies that would shed light on long-term impact of day care experiences have not been undertaken. Thus, there is the possibility that latent or "sleeper" effects will emerge at later points in the lives of children who were exposed to day care when very young, and it can be argued that effects of day care have not been seen because the measures have not been applied at the appropriate time. Meyer (1977) points out that since we currently have no conceptual basis for estimating when such latent effects might occur, this argument is untestable. (For instance, if effects do not show up five years after the day care experience, it could be argued that effects would show up if measured still later.) He stresses the need for theory concerning long-term effects, so that testable hypotheses can be developed, and the relevant research undertaken.

How Are Program Effects Measured?

Evaluators gauge program effects in terms of change or non-change in various domains of the child's development. Since what is really being documented are changes in measures of the child's performance or behavior, conclusions about changes in the underlying developmental processes are obviously constrained by the particular measures selected. A discussion of the many problems and arguments relating to testing in program evaluation is well beyond this paper's task, which is to briefly review impact findings, but a few basic points are clear and must be kept in mind when trying to interpret these findings.

As we have seen, program evaluations frequently fail to establish any substantial gains by the children enrolled. When such findings are called into question, it is often on the basis of the particular measures used in the evaluations. Consider, for example, the following statement:

> Thus fundamental doubts about existing social program evaluation results...persist. Negative evaluation results may have less to do with the schools than with the measures of impact. Evidence to decide this issue is not available, but the questions have affected thought and research. In fact, the issue has changed: Is the problem one of schools' ineffectiveness, or one of tests' insensitivity? (Cohen, 1975, p. 163).

When program effects are not found, a variety of reasons are advanced to explain how real impact can be missed by tests--e.g., the tests are culturally biased, they do not match the program objectives, or they are designed to assess differences between children and designed not to differentiate program or treatment effects (Cohen, 1975); assessment occurs only in a testing situation, which is inappropriate for disadvantaged children, rather than in a variety of more naturalistic settings (Zimiles, 1970); assessment covers too narrow a range of domains, usually intellectual (Horowitz & Paden,

1973, Miller & Dyer, 1975); static variables, such as IQ, are measured rather than process measures, such as teacher-child interaction, or modes of information processing (Shipman, 1973). The importance of selecting appropriate and sensitive tests was illustrated in the evaluation of the Parent Child Centers: Positive effects were obtained with the Preschool Inventory, but not with the Denver Developmental Screening Test (Holmes, et al., 1973). Had only the latter test been used, no impact would have been observed.

The selection of tests and measures by evaluators often reflects a particular underlying philosophy of learning and development, of course. Different program perspectives and emphases can lead to different expectations regarding not only what kinds of gains will occur, but when they will occur. A model of intellectual development based on the sequential accumulation of learning skills might lead to the expectation of immediate gains in selected skills, and the subsequent selection of tests which would be sensitive to this pattern of results. Another model of intellectual development, in which motivation, attitudes, and styles of behavior figure more prominently, might cause evaluators to give greater significance to measures of short-term motivational and attitudinal changes, and long-term intellectual changes (Miller & Dyer, 1975, p. 3).

On the other hand, even when significant gains do occur, questions are raised about the meaning of the test results. The most frequently heard criticism is that the test is too closely geared to the content of the program, or that the program staff have "taught to the test." For instance, this could be suggested as a reason for the more favorable results reported for "Sesame Street" as compared with Head Start programs: specific tests were used to evaluate the impact of "Sesame Street" which were directly related

to the program's teaching objectives, while more general IQ and achievement tests were used to assess the more nebulous objectives of Head Start programs.

Finally, many of the gains from intervention programs, especially over the short term, have been criticized as relating more to improvements in test taking skills than to real changes in the processes which the tests ostensibly assess:

> More often...positive results stem from the program's emphasis on the need to attend to detail and the familiarity it provides with a didactic communication process strikingly similar to the interrogation process used in testing. It requires the child to "tune in" and participate at a level which facilitates test performance ....If there is any generality to the effect of this type of learning, then it is quite valuable, but if its effect is specific to the particular structure and demands of the evaluation instrument, then one may justifiably question the usefulness of this form of cognitive growth and the concern with measuring it (Zimiles, 1970, pp. 242-243).

The Predominance of Cognitive Measures

Most of the available evidence on program effects pertains to changes in performance on measures of cognitive aptitude and achievement, although the need to look for impact in non-cognitive domains (e.g., socioemotional development, health, family, and community) has been widely acknowledged (Bronfenbrenner, 1974; Datta, McHale & Mitchell, 1976; Zigler, 1973; Zimiles, 1970). This emphasis on cognitive assessment occurred in spite of the original Head Start objectives which were heavily weighted toward increasing social competence in young disadvantaged children (Datta et al., 1976; Zigler, 1973). Even with regard to cognitive development, however, it has been argued that the measures typically used in evaluation studies tap too narrow a spectrum of processes and abilities (Zimiles, 1970).

According to these perspectives, then, even if there were no methodological weaknesses in the bulk of evaluations which have provided evidence about the

impact of programs on young children (and there are), the findings speak to only a portion of the child's development. Less simplistic models of intellectual, as well as general development are likely to be incorporated in future evaluations. As White (1976) explains

> The best data we have now suggest that there is not one line of growth in cognitive development but a number of lines of growth, at least partially independent of one another....The child is not only constructing his theory of space, time, causality. He is constructing a theory of the self, of significant others, of social distance, of politics, of social influence and efficacy.... If our present day conceptions of cognitive development are changing to encompass these things, as I believe they are, then I believe we are becoming prepared to think about preschools in rather more complex ways (pp. 169-170).

Finally, much has been written, pro and con, concerning the use of IQ tests in evaluations of intervention programs for disadvantaged children. The issues involved are far-ranging and exceed the scope of this report; they range from questions about the appropriateness of selecting general standardized tests of intellectual potential for the assessment of programs with different curricula and different objectives (Rivlin & Timpane, 1975), to questions about cultural and class biases (Wilkerson, 1970), to questions about the degree to which increments in IQ scores are predictive of later school performance (Zimiles, 1970). With regard to this last question, Miller & Dyer (1975) found that IQ increases resulting from Head Start experiences did not predict first-grade achievement as well as preschool achievement predicted IQ measured in first grade.

In sum, much of the evidence on the impact of Federal programs pertains to children's cognitive development and performance. It is apparent, however, that even conclusions about effects on cognitive development must be regarded as tentative and incomplete, especially in light of the narrow range of measures used.

Section 3. Short- and Long-Term Effects Revisited: Non-Cognitive Outcome Measures

Socioemotional Development

While most of the findings on program impact pertain to cognitive development, some attempts have been made to measure social changes, and significant effects have been found. There is considerably less comparability among the instruments employed, however, since the popular standardized tests available in the cognitive area have no counterparts in the socioemotional area. Zigler (1973) attributes this difference to the "state of refinement" of socioemotional theory and measurement, and argues that cognitive variables are in no way "more real" than socioemotional variables. Nonetheless, reliable measures of social development have not been and are not likely soon to be forthcoming. As White (1973) sums up: "Only crude measures of noncognitive variables deemed important to school success and personal adjustment are available, and there is little agreement concerning what constitutes positive change in the social and emotional domains" (p. 187).

Head Start and Follow Through. Administrators and evaluators have been aware from the beginning of the limitations and problems involved in assessing effects on socioemotional development (e.g., see Datta, 1975; Smith, 1975). In light of the state of the art of measurement, it is not surprising that the findings are mixed with regard to socioemotional development. Positive effects on socioemotional development have been measured, but pre-post differences are typically small and inconsistent or contradictory across studies. Gains resulting from Head Start and other preschool intervention programs have been found (but not consistently) in: self-concept, achievement motivation, and socially-mature behavior (Mann et al., 1976); achievement motivation and social adjustment (Datta, et al., 1976); self-concept and adjustment to

school (White, 1973); social attitude and adjustment, and self-confidence and trust (Ryan, 1974).

The complexity of socioemotional processes has been pointed up by Bridgeman and Shipman (1975) in a report on the ETS-Head Start Longitudinal Study. They found levels of self-esteem high in children at the preschool level and low at the third grade level. In other words, children come into the school situation with high self-esteem, but over the course of school, presumably as a result of success and failure experiences, their self-esteem diminishes. Thus, early special efforts to improve self-esteem appear unnecessary. The changes that occur during the subsequent years in school, however, are not easily assessed. Internal analyses of the scores showed little stability over time in self-esteem for these children.

> The general low stability for measures of self-esteem and achievement motivation investigated in this study and their different patterns of correlations across years suggest that these behaviors are undergoing considerable developmental change during this period. Thus, these measures do not lend themselves to a pre-post design which assumes constancy of meaning in the variable being assessed at both points in time. Also, designs which assume linear growth are likely to be inappropriate for assessing social and emotional functioning (Bridgeman & Shipman, 1975, p. 80).

Television Programs. The early emphasis on cognitive skills in "Sesame Street" has been enlarged to include socioemotional concerns. Stein and Friedrich (1975) report preliminary findings of a small study that children, after viewing segments of "Sesame Street" concerned with cooperation, were more cooperative than non-viewers in test situations similar to the situation featured in the program. Although this single experiment is interesting, it provides no real evidence of Sesame Street's effects on socioemotional development.

Day Care. Concerns that day care may have harmful effects on the child's development are even more pervasive with regard to the socioemotional domain.

Such concerns have directed research in this area primarily toward two issues: the infant-mother relationship, and aggression.

A question motivating much of the research is: Do frequent separations of the very young child from his or her mother impede the development of a strong affectional bond between the child and mother? While the origins, dynamics, and significance of such a bond vary across theories of child development, many scientific and lay hypotheses share at least the presumption of the bond's reality, and its general importance for later healthy functioning.

The research findings available to date indicate no general support for the concern that day care for infants and young children interferes with or weakens the mother-child relationship (Bronfenbrenner, et al., 1976; Heinicke & Strassman, 1976; Kagan, 1976; Ricciuti, 1976). Similarly, there is no indication that the child develops a preference for a caregiver over his or her own parent (Bronfenbrenner, et al., 1976). A number of qualifications apply, however, many of them familiar by now. Perhaps the biggest problem is the narrow focus of research on day care in general, and research on the effects of day care on socioemotional development in particular. Especially narrow are the conceptualization and assessment of the mother-child relationship (Ricciuti, 1976). Most studies examine the effects of day care experiences on the child's reactions to being left by the mother in the presence of a stranger in an unfamiliar setting or room. The amount of the child's subsequent distress, for example, is measured as an indicator of the child's attachment to his or her mother. While few consistent differences between day care children and home care children have shown up on this measure, the implications of such differences would not be clear anyway. Furthermore, the assessment of such behaviors in the laboratory, rather than the home or day

care center, renders such research ecologically invalid, according to some (e.g., Bronfenbrenner, et al., 1976).

In addition, studies in this area are characterized by small samples (Ricciuti, 1976), and lack of random assignment to experimental and comparison groups (Bronfenbrenner, et al., 1976). That is, children enrolled in day care programs often come from families with backgrounds different from those of the families of home care children. For instance, Heinicke & Strassman (1976) report that day care mothers in one study appeared to be less emotionally caring of their children, than were the mothers in the comparison group.

A point made earlier with respect to studies of the impact of day care on cognitive development deserves repetition here. Studies relating to socio-emotional development have examined the effects of high-quality, model day care centers. Consequently, little is known about the possibility of harmful effects of low-quality programs (Bronfenbrenner, et al., 1976).

Finally, Ricciuti (1976) points out that we have very little descriptive data on the actual phenomenon of separation of the child from the parent at the beginning of the day care day. Ricciuti's own research indicates the importance of familiar, stable caregivers in minimizing distress associated with separation, which becomes particularly apparent toward the end of the first year of the child's life (pp. 24-25).

A second general area on which research has concentrated is the effects of day care on the child's relationships with other children and with adults. This research has focused primarily on the development of aggression in day care children. There is some evidence (although neither consistent nor conclusive) that children who have been in day care since early in life subsequently display more aggressive and uncooperative behaviors (Bronfenbrenner,

et al., 1976). However, again these studies have measured narrow aspects of social development, in a small number of settings, with the usual sampling problems. Thus, the question of whether day care is deleterious to the child's socialization is "open" (Ricciuti, 1976), and "equivocal" (Meyer, 1977). Furthermore, the increase in aggressive behaviors that has been found in some studies appears to be part of a more general increase in a variety of both positive and negative behaviors, and a higher level of peer interactions in general upon entering a new day care center or social setting (Bronfenbrenner, et al., 1976; Heinicke & Strassman, 1976; Meyer, 1977). Meyer suggests that any day care setting allowing a degree of freedom will cause an increase in general activity levels, and that changes seen with respect to aggressive behaviors are also occurring with respect to other kinds of behaviors, including those that are socially desirable.

> There is some evidence to suggest that center-based day care generates certain social and emotional consequences in the form of delays in acquiring adult standards of acceptable behavior. On the other hand, there appears to be some evidence to indicate that in center-based home care children develop a broader repertoire of behaviors that may well stand them in good stead when they encounter the elementary school situation (p. 30).

Similarly, Ricciuti (1976) speculates that the aggressive behaviors seen in this research may be specific to the day care setting, and reflect a greater sense of mastery and independence in the familiar day care environment. In addition, Bronfenbrenner, et al. (1976) point out that an increase in negative behaviors has not been found in all day care centers, nor has it appeared in research on day care in some other countries.

The labelling of certain behaviors as "negative" or "undesireable" is itself problematic. As Ricciuti points out, since we do not know the extent to which aggressive and other behaviors carry over beyond the day care

setting, it is difficult to judge whether they are undesireable, or actually adaptive to that situation. Furthermore, program evaluators, caretakers, teachers, and parents are not likely to agree on what levels of aggression are appropriate to particular settings, or to society in general (Meyer, 1977).

Heinicke & Strassman (1976) suggest the possibility that the variables under study (e.g., aggression modulation, and relationships with peers and adults) may in turn be correlated with measures of the quality of the parent-child interaction. That is, the day care experiences may be less of a factor in the outcome behaviors than are parent-child influences associated with the decision to enroll the child in day care (pp. 10-11). Along these same lines, Kagan (1976) suggests that the parents' attitudes toward their child, and particularly the child's perception of his value to his family, exert more influence on his psychological functioning than do specific caretaking experiences (e.g., day care vs. home care) in infancy and early childhood.

> How is that possible, considering the fact that the day care children spent as much time in the center as they did at home? An initial attempt at interpretation assumes that the psychological experiences at home have a priority--they are more salient and more affectively charged than the experiences at the center (p. 65).

While one can offer reasonable explanations of why a child's parent may be so much more salient than a caretaker in a group setting (e.g., see Kagan, 1976, pp. 65-69), the necessary research to support such speculations has not been undertaken.

Family Change

The impact of programs on children can occur directly, as when the child acquires new knowledge or learning skills in the classroom, or indirectly, as when other people or institutions serve to mediate or amplify the effects of the program. The most apparent agents of change that can function in this

way are the child's family and community. Such interactive effects are likely to be complex, of course. For instance, a program might promote a change in the parents, leading to a new pattern of family functioning, which in turn might cause the child to interact differently with peers and adults in school, become a more effective learner, and in turn account for gains in performance on standardized tests. On the other hand, the initial changes may occur in the child rather than the parent, but these changes may affect the parent's behavior, and precipitate an interactive process such as that described above.[2] In any system of reciprocal interaction the combinations of influences are virtually endless; a complete understanding of them is probably unattainable, and a partial understanding difficult, demanding carefully designed, comprehensive research strategies. While such ambitious goals have not yet been undertaken in the evaluation of children's programs, some evidence is available which at least sheds light on preliminary questions about the family and community as mediating agents in program impact.

Head Start and Follow Through. From the first, the recognition of the family and community as necessary elements in the interaction equation has been inherent in the philosophy and implementation of Head Start (Datta, et al., 1976; Mendelsohn, 1970; Zigler, 1973). A major objective of Head Start is to help the low-income family resist alienation and the tendency to turn away from the community (Shipman, 1973, p. 190). The appropriateness

[2]Similar cycles of interaction can be initiated between teacher and child, accounting for changes beyond those directly attributable to the curriculum, teaching style, environmental setting, etc. That is, a program may change the teacher's behaviors and attitudes toward the children and their families, which in turn may lead to gains in the children's abilities. Differences between Follow Through teachers and non-Follow Through teachers, have been documented (Bissell, 1973). In comparison to non-Follow Through teachers, Follow Through teachers placed higher value on home visits and parental participation in classroom activities and expressed a higher level of satisfaction with their students' progress. (Bissell cautions, however, that since initial differences between Follow Through and non-Follow Through teachers were not examined, interpretation of these findings is difficult.)

of such objectives has been underscored in the ETS Head Start Study, which found through home interviews that the mother of the Head Start children sampled felt powerless and alienated from society. The Head Start mother was characterized by:

> limited confidence in one's ability to change schools and other institutions for the better, discrepancies between aspirations and actual expectancies, limited knowledge of community resources, limited home resources, less adult availability to the children, more physical crowding and maternal deprivation, greater reliance on kinship contacts, and substantially fewer fathers present in the home (Shipman, 1973, p. 170).

The bulk of the findings concerning impact on the family relate to changes in parental attitudes. Attitudes toward a variety of issues have been examined, and for the most part, but not exclusively, positive effects of Head Start and Follow Through are reported. In reviewing a number of studies of Head Start programs, Mann et al. (1976) describe positive impact on parent's satisfaction with the child's educational gains, parent's confidence in understanding and rearing the child, and parent's self-confidence and coping ability. Bissell (1973) reports findings of parental satisfaction with outcomes of programs in Head Start Planned Variation, and further cites evidence of parallels between the developmental goals of particular models or programs, and the particular changes in parental attitudes. For instance, parents of children in "regular" Head Start classes stressed the merits of the program in terms of babysitting and day care, while parents in model classes stressed satisfaction with academic improvements. Bissell reports failure to find differences between parents of Follow Through and non-Follow Through children in terms of family life (e.g., home reinforcement of school-child relationships), but indicates that for Follow Through parents, positive effects were found on parental awareness of, participation in, and feelings of control over school activities (p. 101). Datta, et al. (1976) found

improvement in Head Start parents' attitudes toward education, but not in their attitudes toward society (e.g., feelings of personal power, reported community involvement, alienation). These evaluators note that anecdotal evidence of positive changes in parental feelings about and participation in society has been presented, however.

Direct observation and measures of changes in the actual behavior of parents have rarely been undertaken. Increases in maternal verbal communication, maternal praise regulation, child verbal responsiveness, and child success have been reported (Bissell, 1973), as have increases in parental participation in subsequent school programs (Mann, et al., 1976).

White's (1973) conclusion about the impact of preschool programs on families stands essentially unchanged:

> Attempts to determine the effects of classroom preschool projects on the families of participating children are few in number and are normally limited to interviews or questionnaires concerned with parental attitudes toward school. The lack of measurement techniques, our ignorance concerning familiar characteristics important to maximal development, and the primary focus on changes in children have contributed to the paucity of family assessment. When parental attitudes are reported, they are typically positive. Payments of parents as staff in preschool projects has obvious financial benefits, and involvement with young children may have beneficial side effects. Questionnaires and rating scales have shown changes in the attitudes of adults, but follow-ups have not been conducted. Given the sketchiness of the data, we cannot reach any well-founded conclusions.

It should also be noted that none of the evidence currently available speaks to the question of durability of changes in parental attitudes and behaviors (Datta, et al., 1976). Thus the findings discussed above, which already must be considered tenuous and fragmentary, in addition are restricted to short-term effects.

Home Start. Perhaps because of the deeper formal involvement of the

program in family life, Home Start impact on parent attitudes and behavior, while following the same general lines as found with Head Start, appears to be more positive and comprehensive. Evaluations of Home Start (Deloria, et al., 1974; Love, et al., 1976) found significant differences between Home Start mothers and control mothers in a number of areas: allowing children to help with household tasks, teaching reading and writing to their children, providing books and toys for their children, and reading stories to their children. Improvements were also noted on measures of maternal teaching style and verbal interaction, and in involvement in community organizations. After 12 months in the Home Start program, some of these differences between participating families and control families diminished.

A recent review of other home-based programs (Hess, 1976) indicates a consistent pattern of positive effects on parental attitudes, parent-child interaction (including verbal behavior), and home environment (with diffusion of benefits to the siblings of participating children).

Television Programs. Few items of evidence are available, and the few findings we have are mixed. Parents of children who viewed "Electric Company" regarded their children at the first-grade level as better readers than did parents of control children. But similar effects were not found for parents of children at higher grade levels, and no other changes in parents' attitudes were found (Ball, 1976, p. 6).

The Handicapped Children's Early Education Program. HCEEP project regulations require inclusion of a parent-family participation component, and recommend activities such as assistance in understanding and coping with the child's handicap, psychological or social work services, information on child growth and development, information on special education techniques,

carry-over activities to the home, and opportunity to participate in planning and evaluation of the program (Stock et al., 1976).

Parent involvement was assessed through interviews with 129 parents of children who had participated in 32 HCEEP projects. The interviews indicated that 96 percent of these parents carried out the prescribed activities, which pertained to language skills, motor skills, self-help skills, cognition and attention skills, and 68 percent carried out these activities on a daily basis. Almost all of the parents perceived positive changes in their children's behavior, most often in the language, motor, attention and self-help areas. Eighty percent of the parents said they had benefitted from the programs, especially in learning how to work with children, and 66 percent reported gains in forming realistic expectations for their children's future. Finally, almost all expressed satisfaction with the services, facilities and equipment, and the staff qualifications. No parents judged the HCEEP projects unsuccessful in program effectiveness.

All of the effects assessed by the interviews were directly related to specific program objectives and activities; no information is available concerning more general changes in parent attitudes and behavior, or in parent-child relationships.

Day Care. Most day care researchers agree that day care experiences per se do not appear to have direct substantial effects on children, at least as typically measured in programs of relatively high quality. Kagan (1976) and Heinicke & Strassmann (1976) suggest that family characteristics and the home environment are more likely sources of any variation found on the outcome measures used in these day care studies:

> Whatever its origin in terms of the relative contribution of child and parent factors, it has now been established

> that many of the child variables...used to evaluate the impact of day care are correlated at ages 3 to 5 with clusters of parent-child variables (Heinicke & Strassmann, 1976, p. 16).

This line of thought suggests that a more appropriate research strategy (than those which generated the findings reviewed in earlier sections of this paper) might be to examine the family as a mediating agent in the impact of day care on the child. That is, how does day care affect family economy, parent-child relationships, parental attitudes, etc., and thus indirectly affect the child's development?

Relatively few studies, it turns out, have examined such effects of day care on the families of children enrolled in those programs. Bronfenbrenner et al. (1976) examined the small amount of evidence available. From their reading of the data of one study, they concluded that there is a possibility that when the child is enrolled in full-time day care for extended periods of time from early in life, the mother may "lose interest" in the child. It should be noted that this is an interpretation of one study, and Bronfenbrenner et al. point out that:

> The source of the problem, if any exists, may lie not in the objective nature of day care as such, but in the way in which day care is sometimes presented in contemporary American society: namely, as a substitute for rather than a complement to parental care (p. 47).

In contrast, two other studies of high risk infants and children enrolled in day care indicated that the mothers of day care children interacted more, and in more positive ways, with their children, than was the case with mothers in control groups. Other investigations documented some of the kinds of economic and educational advantages that can accrue to mothers of children in day care.

The studies undertaken thus far barely scratch the surface of the issues

relating to the impact of day care on the family. The findings and interpretations briefly described above must be taken as illustrations of the kind of research and thinking that is needed; they do not provide enough evidence to support any conclusions.

Community Change

Head Start. Findings pertaining to program-induced changes in the child's community are even more sparse. While scattered, mostly anecdotal evidence of positive community changes have been reported (e.g., Ryan, 1974), most of the conclusions reached by reviewers of program evaluations (e.g, Mann, et al., 1976; Shipman, 1973; White, 1973; Zigler, 1973) have been based on one major systematic study of community impact of Head Start, carried out by Kirschner Associates, Inc. (1970).

Through interviews with a variety of persons and institutions, such as Head Start staff, school systems, and health agencies, the Kirschner study counted 1,496 changes related to Head Start objectives in all of the 58 communities sampled. Few changes were identified in non-Head Start communities. These changes related to increases in involvement of the poor in community institutions, in employment of neighborhood people as paraprofessionals, and in educational emphasis on the needs of the poor and minorities, and to improvements in health services for the poor. With regard to these findings, Datta (1973) concludes that the more stages of change in which Head Start programs participated, the greater the benefit, scope, and duration of the change; that Head Start programs were equally effective in producing change whether operated by public schools or newly established agencies; that a high level of parent participation in a Head Start program was associated with high involvement of the program itself in bringing about community change;

and that involvement in change was positively related to the degree to which a program specifically defined community change as a program role or objective (pp. 407-408).

Parent-Child Centers. PCC's have been found to be effective in coordinating agencies serving children and their families (Mann, et al., 1976). No evidence of other changes in the community has been provided.

Home Start. When asked about their use of 15 community resources, such as the public health clinic or the State employment office, Home Start and control families indicated almost no differences in the frequency with which they used them (Deloria, et al., 1974). The evaluators concluded that Home Start failed to help families use existing community resources, but it was not possible to determine whether the cause of this failure was the unavailability of the resources, the ineligibility of families for services, the current provision of services to all eligible families, or the ineffectiveness of Home Start (p. 17).

In contrast, increased involvement was reported by Home Start families in community organizations such as the Boy Scouts, Girl Scouts, 4-H club, and church, social, or political organizations. "This finding might be taken to indicate that progress is being made in reducing the community isolation that characterizes many of the Home Start families" (p. 17).

Day Care. Bronfenbrenner et al. (1976) indicate that the impact of day care on society is an important issue--"it is the impact of day care beyond the child himself, on the nation's families and the society at large, that may have the more profound consequence for the development of the next generation of Americans" (p. 2)--but one that is essentially unresearched to date.

Section 4. The Structure of Intervention: Which Curricula and Treatments Are the Most Effective?

While some general conclusions about the effects of programs can be drawn, not all of the results across and even within evaluations are consistent, and definitive conclusions regarding the possibility of positive effects are hard to come by. A few elements of this problem have already been considered: different aspects of a program's impact may show up over the short run and long run, and conclusions about program impact are constrained by the selection of measurement instruments and by other methodological problems. But another, more complex issue must be considered as well--program-child interaction. When evaluation analyses are sufficiently sophisticated and the sample sufficiently large to allow it, general conclusions usually must be qualified with sub-conclusions regarding specific program models or components, and specific categories of children (e.g., by ethnicity, socioeconomic status, or geographical area). Differences among subgroups of the sample were apparent even in the early Westinghouse study, with significant gains by Head Start graduates showing up in some centers but not others. Program planners and evaluators have long acknowledged--often grudgingly, since it is difficult not to hope for clear, uncompromised effects --that the question "Does the program work?" is naive, and must be replaced with questions about which program components work in which ways with which children, under which circumstances, with which staff, etc. Thus, while optimism ran high when Head Start efforts were first mobilized, the failure to find clear gains across the board has led to a replacement of that optimism not with pessimism, but rather with a subdued realism about the complexity of social intervention.

> In the sense that no single program or approach has provided a panacea for the problems of the disadvantaged, compensatory education, as judged by the evaluative studies of the past decade, might be declared a failure. Research in compensatory instructional intervention has not provided a clear blueprint or set of solutions. Nevertheless, a considerable reservoir of research and analyzed experience has provided better insights into the nature of the problem, the alternatives possible, and the processes and relationships which seem promising. There appears to be a growing sophistication in the design and implementation of programs. As Goldberg (1971) observes, some of the early optimism has waned as programs derived from pet theories proved only minimally successful, but there is now renewed enthusiasm and vigor: "Today's thinking is more sober, more cautious, recognizing the infinite complexity of the problems and the futility of simple solutions (p. 88)." (Passow, 1974, pp. 171-172)

Complexity is easier acknowledged than dealt with, however. The design and sampling problems are formidable and expensive to overcome, and many evaluators have had to struggle just to provide one adequate control group with which the program participants as a whole can be compared. Studies of program/child interactions are especially difficult to carry out, and it is almost impossible to avoid confounding variables. This section of the paper reviews findings pertaining to different structures or models of intervention, with some attention to program/child interactions. For the most part, however, child characteristics are considered in later sections.

Head Start

To determine which of various curricula models have the greatest effects on children, the Head Start Planned Variation effort (HSPV) was undertaken in 1969 by the Office of Child Development. As had been found with other Head Start programs, participating children showed short term gains on certain cognitive, linguistic, and perceptual-motor tests (Datta, 1975). Two kinds of questions have frequently been raised regarding the differential effectiveness of HSPV programs: 1) How do HSPV children fare in comparison to regular (non-

Planned Variation) Head Start enrollees? 2) How do the different programs within HSPV affect children?

The first of the two questions is more easily answered, but generally considered to be of less importance. The basic finding is that HSPV programs lead to gains essentially equivalent to those associated with regular or non-sponsored Head Start programs (Datta, 1975; Mann, et al., 1976; Smith, 1975; Weisberg, 1974). Weisberg notes that superiority of the HSPV programs might have been expected, since they were allocated more money per child, and greater effort was made to insure that the educational approaches were carried out well. In contrast, Smith considers the question to be of little importance, arguing that there are no apparent reasons, other than the money differences, why the different HSPV programs taken as a whole should be more effective than other Head Start programs.

The more important question of individual HSPV model differences has received considerably more attention. The answers are not conclusive, although a general pattern of findings does emerge. Basically, no one program emerges as the most effective on all measures for all children (Datta, 1975; Mann, et al., 1976; Smith, 1975; Weisberg, 1974). As Weisberg puts it, Head Start programs are quite homogeneous in their ability to promote general cognitive development, and no one program is overall particularly effective or ineffective (pp. 294-295), or as Datta puts it, "within a wide variety, one curriculum is as good as (or as poor as) another" (p. 87).

Some differences between models can be found, however, for <u>specific</u> outcome measures. That is, some programs, although not superior on the full range of measures, did prove to be more effective than others on a few particular measures. The differences generally favor "academically oriented" programs on

measures of specific cognitive growth or academic skills, but not on measures of general cognitive growth (Smith, 1973; Weisberg, 1974).

The question of differential program effectiveness has not been answered conclusively, then. Methodological weaknesses in the evaluation of programs, and in addition questions about how well program models are actually implemented, cloud the issue. Differences in models and in quality of implementation have typically been confounded. Evidence for equality of effects of well-implemented programs has been found, but so has evidence for specific effects of programs with particular emphases and objectives (Bissell, 1973). Datta et al. (1976) argue, however, that the primary question of whether a given program emphasis was more effective or merely better implemented cannot be answered from the available evidence (p. 65). In summary, the bulk of the evidence to date fails to support any HSPV program's claims to being substantially more effective than any other.

In reviewing HSPV data, Smith (1975) concludes that there were no strong or stable interactions between particular models and types of children, with one exception--an interaction between measures of competence and passivity in children and the degree of "directiveness" in models. For two years, children who scored higher in "competence" and lower in "passivity" fared better in less directive models, and children who scored lower in "competence" and higher in "passivity" fared better in more directive models.

A much more extensive investigation of interactions between program/teacher characteristics and child characteristics has been reported, however (Datta et al., 1976). Many aspects of teacher and program characteristics were found to be related to gains by the children enrolled in Head Start classrooms between 1966 and 1969. The broad categories examined were teacher's

background, teacher's approach and program emphasis, teacher's behavior in class, classroom activities, classroom equipment and materials, and classroom atmosphere. The characteristics within these broad categories which were examined are too numerous to discuss here, but these complex relationships between teacher/program characteristics and child outcomes were summarized as follows by the authors of the report.

With regard to preschool achievement, in general children gained most in classes where: the teacher was older; the teacher had less formal education and experience; the teacher did not use physical control; there was high or moderate emphasis on independence and self-care; there was high emphasis on structured lessons; there was moderate emphasis on small group activities; there was ample large muscle equipment available but not excessively used; there was high emphasis on art activities.

With regard to cognitive ability, in general children gained most in classes where: the teacher was older; there was moderate emphasis on small group activities; there was low emphasis on rote learning; the teacher did not use physical control; there was high emphasis on independence and self-care; there was ample large muscle equipment which was not excessively used; there was moderate use of cognitive materials; despite the teacher's self-reported low emphasis on language, language materials and activities were frequently observed.

With regard to learning ability, in general children gained most in classes where: the teacher was older; there was a low emphasis on teacher's socioemotional interaction; there was high emphasis on structured lessons; there was low emphasis on rote learning; there was low emphasis on verbal communication; there was moderate emphasis on small group activities; there was low emphasis on language and discrimination learning tasks.

With regard to social adjustment, in general children gained most in classes where: the teacher had little formal education or previous experience; there was high emphasis on independence and self-care; there was high emphasis on child socialization; there was a high level of teacher continuity and a low pupil/teacher ratio (Datta, McHale & Mitchell, 1976, pp. 53-54).

Interactions between specific program characteristics and child characteristics were also examined, and again the findings are too numerous and complex to present here. They are summarized by Datta et al., as follows:

> The findings suggest that there may be two constellations of program variables which are differentially effective for different groups of children.
>
> The first cluster includes program elements related to the orderliness and structure of the total environment of the Head Start center. Specifically, these elements include: high quality facilities (as reflected in the availability of expensive large muscle equipment); low pupil/teacher ratios; high teacher continuity; and moderate to strong program emphases (including academic emphases). This program cluster seems to be especially beneficial for children who begin Head Start with a relatively low pretest IQ (below 85), children who are older, and children from both urban and non-urban areas.
>
> The second cluster includes program elements more related to the social and interpersonal climate of the class. These include: teacher's use of non-physical methods of control; moderate, socially-oriented program emphases (on independence, self-care and socialization); a stable classroom atmosphere characterized by high teacher continuity, low pupil/teacher ratios and low pupil turnover rate; and more frequent use of dramatic (role playing) activities. Children who especially benefit from these program/teacher inputs had high pretest IQ's relative to their Head Start counterparts, entered Head Start at an earlier age (under five years) and tended to live in urban areas (pp. 59-60).

The issue of structured versus non-structured programs has received considerable consideration from evaluators of Head Start and other preschool programs. Naturally, different definitions of structure can be found. For the most part, however, these various definitions correspond to White's:

> In summary, high structure describes a situation in which both teacher and child roles are prescribed by project planners. Low structure describes a situation in which neither teacher nor child roles are prescribed. Mixed or median structure corresponds to alternating periods of high and low structure, or to a situation in which both the child and the teacher are free to act within prescribed motor activities (1973, p. 124).

It is important to bear in mind, however, that even programs at different ends of the structured/non-structured continuum may be similar in other respects. Miller and Dyer (1975) point out, for instance, that most programs, regardless of their degrees of structure, operate on the assumption that there is a culture of poverty different from the middle class environment, and consequently are based on environmental deficit models. The differences in structure relate to the different aspects of the deficit which are emphasized--e.g., deficits in language interaction versus deficits in affection and approval.

A general finding which holds up across many program evaluations is that the most structured programs lead to the largest gains by children (Bissell, 1973; Bronfenbrenner, 1974; Horowitz & Paden, 1973; Karnes, 1973; Miller & Dyer, 1975; Palmer, 1976; Ryan, 1974; White, 1973). This general finding is subject to qualifications, however. As indicated above, structure is defined differently across studies. The gains associated with highly structured curricula appear to be more substantial for the most disadvantaged and younger children (Bissell, 1973; Datta, et al., 1976; Bronfenbrenner, 1974; Karnes, 1973). As with all programs, the effects of highly structured programs may appear only in selected domains of development. Bissell (1973) draws the conclusion that highly structured experiences for disadvantaged children are more effective in producing cognitive gains than programs with low degrees of structure.

The possibility of negative side-effects of highly-structured programs has also been raised. Bronfenbrenner (1974) questions whether structured, cognitively oriented approaches may promote passive, inflexible learning styles that are not as well-suited to upper grade levels as are more independent problem-solving styles. Miller and Dyer (1975) also raise the possibility of "negative transfer", citing evidence of a depressing effect of structured programs on curiosity and inventiveness. They suggest that it is inadvisable to separate cognitive and noncognitive skills in designing curricula. Other evidence has been presented, however, that highly structured programs can produce good work habits for later school experiences, and enhance social functioning and attitudes (Karnes, 1973).

Programs which are highly structured in another sense--good administration and staff management--have also been found to be more effective than more loosely structured programs (White, 1973). White sees consistency in striving toward defined objectives as a key element in a program's success, and suggests that good staff planning efforts and commitment are a necessary base for such consistency.

In summary, we are left with a mixed picture of the differential effectiveness of preschool models and curricula. No single approach or set of approaches emerges as clearly superior over the short and long run for all disadvantaged children. At the same time, programs often are more effective than others in producing gains in areas on which they place heavy emphasis. Furthermore, some children appear to benefit more than others from certain teacher/program inputs. Running through this pattern is the dimension of organization and structure, with its various definitions: Programs that are highly structured, both in terms of staff planning and management, and control over the teacher-child interaction, tend to be more effective in meeting their stated objectives.

Many questions remain to be resolved, however. In addition to questions about the broader effects (both positive and negative) of various models, there is the question of the effects of different models than those that have been investigated thus far. Miller & Dyer (1975) point out, for instance, that while programs have incorporated some of the characteristic features of middle-class life (e.g., toys, books, games), no formal programs have tried to incorporate the more subtle features of middle-class homes, such as the power relationships and interactional patterns (p. 133).

Also remaining is the larger question of whether clear interpretations of findings pertaining to model differences will ever be possible. Datta, McHale & Mitchell (1976) stress the need to go beyond global assessments of models and child outcomes, to undertake fine-grained analyses of the interactions between teacher/program characteristics and child characteristics, as they figure in children's developmental gains. White (1973) and Miller and Dyer (1975) also underscore the importance of determining the effectiveness of more than just broad clusters of teacher and program variables. It is possible that studies comparing whole model programs may not ever produce much information about the effective components of the programs (Miller & Dyer, 1975, p. 134). These investigators recommend moving toward miniprograms designed for research purposes, and simpler than the typical curriculum model studied thus far.

> Cause-effect questions about educational treatment dimensions can only be answered, we believe, by a research strategy which involves the implementation in actual classrooms of experimental situations designed to provide adequate control over program components not under study, such as sequence, content, format, and materials. Such studies will also require careful definition and continual monitoring of the independent variables in order to insure that levels of techniques remain high and to determine the extent to which they are being applied to individual children;

> they must also include frequent monitoring of the kinds of changes that take place in children as treatments operate over a period of time (Miller & Dyer, 1975, p. 135).

Follow Through

The same general pattern of results that we saw in Head Start Planned Variation obtains also for Follow Through. While the models sponsored are clearly different (Passow, 1974), no particular programs consistently outperform the others (Cohen, 1975), with the exception of the Direct Instruction Model. Some programs have appeared to be superior to others, but the gains produced generally have not proved consistent from one year to the next. As is the case with preschool programs, interpretations of Follow Through impact are complicated by the uneven pattern of results that shows up across different outcome measures. Some degree of match between the objectives of individual programs and developmental outcomes has been reported (Bissell, 1973). As with HSPV, there is evidence that more structured models have the greatest effects on achievement test scores (Bissell, 1973; Bronfenbrenner, 1974; McDaniels, 1975; Abt IVA, 1977; Haney, 1977). It is difficult to select measures, of course, that can be applied to such diverse programs, and some sponsors of relatively ineffective models have objected that negative results reflect the inappropriateness of the measures, rather than failures of the programs (e.g., see Haney, 1977). It has also been argued that non-structured models have been more difficult to implement than structured models (Cohen, 1975). At any rate, the effectiveness of the various types of models, which have been categorized as basic skills models, cognitive conceptual skills models, and affective/cognitive models, have been judged as follows (Abt IVA, 1977):

> Groups of disadvantaged children served by Follow Through models that give primary emphasis to basic skills training have tended to score higher on basic skills tests than have groups served by models with other emphases.
>
> No type of model was notably more successful than the others in raising scores on cognitive conceptual skills.
>
> On the whole, children served by basic skills models scored at least as well on tests of self-esteem and achievement responsibility as have children in models that aim directly to develop these outcomes...The improved basic-skills scores, where they have been achieved, do not seem to have been bought at the price of reduced scores in the domain of feelings and motivations (pp. 3-4).

Additional data are available from a recent report (Stebbins, et al., 1976) on evaluations of 14 Follow Through models, which for the most part confirm the above picture of inconsistent and unsubstantiated differences between models. The findings are too complex to present fully in this review, since the results within each model can and usually do differ across cohorts of children, sites at which the model is implemented, and outcome measures.

> No model has shown itself to be powerful enough to raise test scores everywhere it has been tried. The most successful models had unsuccessful sites. Some of the least successful models had sites in which positive effects predominated (Abt IVA, 1977, p. 2).

Briefly, however, the findings can be described as follows, drawing on the data presented by Stebbins, et al., 1976. Two models show especially negative results: the Cognitively Oriented Curriculum Model, and the EDC Open Education Follow Through Program. Four models show mixed results, but tending more toward the negative side: the Tucson Early Education Model, the Individualized Early Learning Program, the Interdependent Learning Model, and the Home School Partnership Model. Five models show mixed and inconclusive results: the Responsive Education Model, the Bank Street Model, the Behavior

Analysis Model,[3] the Self-Sponsored Model, and the Language Development (Bilingual Education) Approach (SEDL). Two models show mixed results, leaning more toward the positive side: the Florida Parent Education Model, and the California Process Model. Finally, only one model comes across as predominantly effective across cohorts, sites, and categories of outcome measures: the Direct Instruction Model, University of Oregon College of Education, a basic skills model.

The implications of the above findings are not clear, however. They are based on only four standard outcome measures: the Metropolitan Achievement Test, the Ravens Coloured Progressive Matrices, the Intellectual Achievement Responsibility Scale, and the Coopersmith Self-Esteem Inventory.

Haney (1977) reports that:

> The 1972-73 review panel acknowledged that the limited reliance of the evaluation on only those four outcomes would leave "unanswered many questions about children's learning ability," but the technical inadequacies of other test instruments led the panel to recommend only /these four tests/ for the final assessment at the end of third grade (pp. 175-176).

Haney argues further that:

> the findings are quite limited and leave open a host of process questions. Why do these apparent differences turn up? Do the appareht differences in classroom practice and student test scores result from sponsor model implementation or perhaps from the differential selection of teachers to work with different sponsors? Do the apparently higher test scores of children in classes associated with more structured sponsor models represent more learning or could they result merely from more practice with achievement tests? (p. 167)

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[3] Stebbins et al. presented only interim findings for the Follow Through Cohort III children. More favorable results for the Behavior Analysis Model are now indicated for Cohort III. Haney (1977, p. 166) reports that the Behavior Analysis Model, like the Direct Instruction Model, tends to have increased scores on achievement tests.

Home Start

Models of intervention have not been systematically varied within the Home Start program, as they have been within Head Start and Follow Through, so no findings are available. A general comparison of Home Start and Head Start programs was undertaken, however. For the most part, the two programs proved to be equally effective, both for parents and for children. While some differences were found favoring Head Start, and some favoring Home Start, for most of the variables there were no differences in the effects of the two programs (Love et al., 1976).

In addition, Love et al. report findings pertaining to the amount of time spent during a home visit on particular components. They found no significant relationship between the amount of time spent on a specific program objective and the corresponding parent and child outcomes. For instance, home visitors who concentrated more on school readiness did not achieve greater gains in this area of child development than home visitors who spent less time working on this objective. While this variation is certainly not on the same scale as the model variations employed in Head Start and Follow Through, it does bring to mind the failure in those programs to find consistent outcome differences relating to differences in objectives.

Findings relating to program differences are available for home-based programs other than Home Start (Hess, 1976). In reviewing a number of such programs, Hess concludes that some definitely produce greater changes than others. He is unable to account for the major factors behind these differences, however. Five features of parent participation which he selected as potentially related to the degree of program impact on children, turned out to be only modestly related to the magnitude of effects, and failed to account for the large differences among the programs (p. 6).

Television Programs

Again, model differences have not been systematically manipulated. The effects of viewing "Sesame Street" at home have been compared with the effects of viewing the program at school in the classroom. Children at home benefitted as much as and in some cases more from the program than children viewing at school (Ball & Bogatz, 1970). This difference might relate to several factors, of course, and there is no way to pin them down using the available data. For instance, children simply may have been able to concentrate more in the home setting. Interactions between the child and parent, and the child and teacher may also be contributing factors. Ball and Bogatz found that while some teachers thought the in-class viewing was a worthwhile school activity, others considered it an infringement on more valuable school activities. These negative attitudes may have been associated with an unwillingness on the teacher's part to capitalize on the material presented.

One of the few variations attempted in "The Electric Company" was viewing the program in black and white versus viewing it in color. No difference in the children's achievement was found.

The Handicapped Children's Early Education Program

As was the case with Head Start and Follow Through, HCEEP programs reporting a structured curriculum appeared to produce more positive effects than non-structured programs (Stock, et al., 1976).

Less interpretable is the finding that the observed impact was greater for medium cost programs ($942 per child to $1,340 per child) than for either lower or higher cost programs ($350 to $820 per child, and $1,542 to $4,112 per child, respectively). Also confusing is evidence concerning the child-staff ratios

of the various programs. In one outcome area (personal-social) higher staff-child ratios (8.7 to 15.5 children per contact person) were associated with greater gains than medium and low ratios (4.8 to 6.8 children and 2.1 to 4.6 children, respectively). In the other four outcome areas measured, programs with medium child-staff ratios fared better than either high ratio programs or low ratio programs.

Day Care

General findings concerning the effects of day care experiences have been presented in earlier sections of this paper. Such generalizations are misleading, however, to the extent that they disguise the different forms and styles of care given to young children whose own parents cannot care for them during some part of the day. As Meyer (1977) points out, for instance:

> ...there is nothing inherent in day care programs that can harm or help children. Day care is a convenient label which encompasses a number of different programs, programs that probably generate differences in children (p. 19).

Furthermore, most of the available research on day care examines outcomes of individual model day care centers, and does not compare the effectiveness of alternative forms of care. Within their list of unresearched issues in day care, Bronfenbrenner, et al. (1976, p. 15) include attention to the nature and differential impact of variations such as: high quality vs. poor quality care; center care vs. family day care vs. care in own home (by relatives vs. nonrelatives); part-time vs. full-time care; and custodial vs. developmental day care. Other variations of substantial interest, but also essentially unresearched, are high vs. low ratios of caregivers to children, and structured vs. unstructured programs.

Center care vs. family day care. Family day care typically involves

care for a relatively small number of children (but a greater mix of ages relative to center care) in the caregiver's home, in the child's own neighborhood (Meyer, 1977). The comprehensive services (e.g., health, welfare, educational) that are sometimes delivered through large centers, are not found in day care homes, unless they are affiliated with larger programs.

In reviewing the very small amount of research relevant to this variation in structure, Meyer concludes tentatively that children in family day care are less likely than those in larger centers to be overactive and aggressive, and more likely to have higher scores on cognitive tests. He also points out that family day care programs are characterized by smaller child/staff ratios, and greater adult control of the child's activities, although causal links between such factors and child outcomes have not been firmly established. The greater adult control (i.e., more negative sanctions) is connected with the greater number of opportunities that a child in a private home has to play with forbidden objects. (In contrast, day care centers usually contain mostly child-appropriate materials and objects).

While family day care can be recommended to parents who are looking for a form of care which more closely resembles the kind of care given in their own homes, Meyer concludes that the evidence is "still insufficient to estimate whether center care is harmful relative to family care. At this time any such conclusion is unwarranted and indefensible" (p. 59).

Degree of structure. Few studies have directly compared the effects of different levels of structure, so findings have to be gleaned from separate studies of different kinds of day care settings. The evidence suggests to Meyer (1977) that group settings in which children are "controlled largely by negative sanctioning and fairly rigid structuring of the environment" may

produce a high level of dependency in preschool children (but not in infants and toddlers). Similarly, Heinicke and Strassmann (1976) review evidence that children in structured programs are higher on measures of obedience, but lower on measures of physical activity, spontaneity, and creativity than children in unstructured or open structured programs. On the other hand, cognitive gains have been found in a small number of studies of "highly structured, cognitively oriented day care environments for children from presumably less favorable environments" (Ricciuti, 1976).

At the other extreme, programs with little or no adult control appear to hinder the child's learning of appropriate behaviors and responsibilities (Meyer, 1977). Furthermore, there is evidence that children in unstructured programs are more aggressive and hyperactive (but also may show higher levels of "positive" behavior). Heinicke and Strassmann (1976) note that the effects of the degree of structure in a day care environment may vary from child to child, and that a highly structured environment might be oppressive to an active child, but beneficial to a passive child. Also, they point out that teacher characteristics are likely to be confounded with degrees of structure.

Child/staff ratios. Most recommendations concerning the ratio of children to staff in day care programs have been based on common sense, and considerations of order, discipline, and safety. There is no question that with too large a number of young children, it is difficult for a caregiver simply to maintain order, much less organize any kind of coherent educational or social experiences. We have little hard evidence, however, documenting the actual effects on children of different levels of child/staff ratios, and virtually none relating to lasting effects. Long-term effects have not been observed except in studies of children institutionalized in settings characterized by extremely large child-caregiver ratios and minimal stimulation. Even

these effects appear to be reversible, providing that the child is moved to a more satisfactory environment (Meyer, 1977).

The effectiveness of a particular child/staff ratio is modified by a number of factors, such as the physical arrangement of the day care facilities, the experience and qualities of the caregivers,[4] characteristics of the child (e.g., age, physical status, temperament), the goals of the program, and the social structure among the children and caregivers. Thus, while most day care researchers oppose extremely high ratios (and insist on lower ratios for younger children) they are reluctant to endorse rigid regulations that specify exact ratios without concern for the myriad of factors that can affect the impact of such ratios.

Arguments that high child/staff ratios are harmful to development appear to be more persuasive with respect to infants than to older children (Kagan, 1976; Meyer, 1977). There is little direct evidence available, however. In examining the "consistencies that occur over diverse studies", in lieu of such direct evidence, Meyer concludes that in programs with low child/staff ratios (e.g., 2/1 to 4/1), children are quieter and less aggressive, and score higher on standardized tests. Some data indicate the possibility that lower levels of adult-child verbalizations and interactions may occur with high child/staff ratios, but there is no evidence that such patterns last over the long term, or that underlying linguistic and social competence is affected.

Meyer emphasizes the need to distinguish between the ratio of children to staff in small, cohesive subgroups within a day care center, and the ratio of all children to all staff in the center.

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[4] For instance, Meyer (1977, p. 63) makes the following point: "Is a trained specialist worth more to the children than say two partially trained caregivers? I doubt that there is a clear answer...the ratio of professionals to lay people is probably a function of the number of children in the center, the administrative organization of the center, and the physical layout of the center."

> For example, a ratio of 5/1 means five children working with a single, and relatively constant, caregiver. A ratio of 50/10 also is a 5/1 ratio, but it does not define the working or operational group. Thus, in a 50/10 plan a few children will receive considerable care and some children will receive more. The size of the actual ratio can vary considerably depending upon children's age, the physical setting, and program philosophy. But, if the ratio is to have meaning, it seems necessary to define it in terms of actual caregiver/child contact rather than an abstraction derived from the number of caregivers and children (p. 4).

Custodial vs. developmental care. Some day care settings offer nothing more than custodial care for the children of parents who cannot care for them during the day, typically because both (or the only parent) are working. It is difficult to specify precisely when care stops being custodial and becomes developmental. The issue itself is often the focus of emotionally charged arguments between those who stress day care as an economical service for working parents and those who stress day care as a means of facilitating the child's development. At any rate, the term custodial care is typically used to describe programs that provide shelter, supervision, and possibly food (often supplied by the parents), but not special health, nutrition, educational, psychological, and social services. While few experts and lay persons argue against the need for such things as addquate nutrition, there is considerably less agreement on the value of educational components in day care programs for young children.

On the one hand, some benefits (at least over the short term) of educational programs for infants and young children, especially those characterized as high-risk, have been demonstrated in various studies reviewed in the first section of this paper. On the other hand, there is no evidence that a formal educational component is a necessary ingredient of a high quality day care program for infants and young children. For instance, Ricciuti (1976) empha-

sizes the importance of "opportunities for significant learning experiences," but argues that they are more effective if perceptive caregivers capitalize on them as they occur naturally in the course of the infant's or young child's play and interactions. A set of prescribed learning activities, in contrast, is not as likely to mesh with the level and timing of the child's own cognitive needs. Meyer (1977) carries this line of thought a step further, and argues that a formal educational program, especially if poorly and insensitively managed, could be harmful to the young child's cognitive and social development. (Insensitive didactic techniques which discourage spontaneity, creativity, and curiosity can be used with or without a formal educational curriculum, of course, so "non-educational" programs are not automatically exempted from this same caveat.) In the absence of data which clearly support either position --that formal educational components in day care are useful or are harmful-- Meyer adopts the viewpoint that "a program that does not offer a formalized educational program is not by definition harmful" (p. 53).

Another important aspect of developmental or comprehensive child care is the provision of welfare services. The issue will be briefly considered in the later section on parent involvement.

Section 5. Assessing the Implementation of Programs: A Problem in Understanding Program Impact

Head Start and Follow Through

The preceding section reviewed research comparing different models of intervention. As program evaluations have often pointed out, however, the actual treatments which are examined in such studies are the implementations of models, rather than the models themselves (Miller & Dyer, 1975). Unfortunately, differences between the strategies prescribed by models and differences in the degree to which the models are implemented have been confounded in many evaluations (Bissell, 1973, Cohen, 1975; Rivlin & Timpane, 1975; Smith, 1975). Thus the findings are difficult to interpret. If one model appears more effective than another, is it due to the prescribed differences between curricula, teaching styles, etc., or because the one was more fully implemented than the other? If, on the other hand, no differences are found, is it because the models are equally effective (or ineffective), or again because the prescribed strategies were never fully implemented?

With respect to the bulk of preschool programs throughout the country, comparative evaluations are especially problematic. Most preschools lack explicitly stated rationales, objectives, and techniques, and their practices typically vary from year to year (White, 1973). Obviously we cannot determine how well a model is implemented if we do not know what the model is supposed to look like in the first place.

In the Planned Variation effort, however, program objectives and strategies were more clearly stated and distinguishable. There is evidence that to some extent intervention was carried out as intended. Measures of implementation, in the form of ratings by program sponsors and observations of class-

rooms, indicated that models were being implemented along the lines envisioned by the sponsors (Bissell, 1973; Lukas, 1975; Stallings & Kaskowitz, 1974). On the other hand, serious questions about the implementation of HSPV and Follow Through programs have been raised.

> ...to say that Follow Through sponsor models have been implemented overstates the evidence if for no other reason that the fact that none of the sponsors' models has been so well specified as to allow determination of full "treatment implementation." So although they are intriguing, the findings from the classroom observation studies leave us far short of knowing the nature of actual Follow Through "treatments" (Haney, 1977, pp. 165-166).

Some programs appeared to be implemented to a greater degree than others, and, in particular, highly structured models whose methods were more easily specified, might have been more effectively implemented (Bissell, 1973; Lukas, 1975). Furthermore, variations in the implementation of the same model from one site to another must be reckoned with (Lukas, 1975; White, 1973.)

The first attempts to implement a model can be expected to present special problems. In the case of Follow Through, many sponsors from research and teaching institutions were trying for the first time to translate abstract ideas or lab school practices into public classroom activities (Stebbins, 1976). Most evaluators considered the data from the first couple of years of HSPV and Follow Through to be suspect, because of such early problems in implementation (Bissell, 1973; McDaniels, 1975; Rivlin & Timpane, 1975). This problem was not a surprise to the planners of the Planned Variation effort:

> It was realized that the sponsors would need time to get their programs going, and that some sponsors might take longer than others to transfer their models to particular sites. It was assumed, however, that all models would be fully implemented by the third year of the study (Lukas, 1975, p. 114).

However, the implementation process may not be as much a function of time as originally conceived by some. Lukas reports that comparisons of 1st and

2nd year sites of HSPV showed no relation between the length of participation and the ratings of implementation. This failure to find an orderly increase in implementation with time should not be surprising, however, considering the number and complexity of factors which can affect the implementation of a model. (See Lukas, 1975, for an extensive discussion of variation in implementation). Such factors include the adequacy of the facilities and materials, the degree of stability in the administration and staff of programs, and the nature of the working relationship between sponsors and staff (Bissell, 1973). As Lukas (1975) sums up: "Implementation varies...because, quite simply, it depends on a large number of people" (p. 120). Perhaps the most important of the various contributors, however, are the teachers; their characteristics, prior experiences, attitudes, and training are potential sources of variation in attempts to implement models. Some models more than others may require substantial changes in the teacher's classroom behavior, and that in turn may require considerably more extensive training than is typically provided by the model sponsors (Bissell, 1973; Rivlin & Timpane, 1975).

The most serious problem relating to implementation is not that variations occur across models and sites (indeed Lukas, 1975, argues that variation in implementation is <u>inevitable</u> and that it is unrealistic to expect all treatments to eventually reach full implementation) but that levels of implementation are difficult to <u>measure</u>. Some efforts to monitor the extent to which the implemented programs conformed to the original models have been found lacking (Cohen, 1975; Stevenson, 1975) and even "crude" (Rivlin & Timpane, 1975). Basically, too much reliance was placed on simple ratings by teachers and sponsors, and it became apparent after the data were collected that different

raters used different criteria, so that cross-model comparisons were meaningless (Cohen, 1975; Lukas, 1975). As Cohen points out: "Evaluators... discovered that they could not interpret what 'well-implemented' on these lists actually meant" (p. 160). In one analysis of sponsors' ratings of their model's implementation, the "pleasantness" of a site (as reflected in level of intrastaff friction, rapport between the administration and the staff, and the adequacy of the physical plant) appeared to influence sponsors' ratings more than did such factors as teacher characteristics.

More sophisticated efforts to monitor implementation with observational techniques have been undertaken (e.g., Miller & Dyer, 1975; Stallings & Kaskowitz, 1974), but even these studies cannot escape the basic problem that the models themselves are complex and not easily defined (Cohen, 1975). At any rate, all evaluators seem to agree that more attention must be given to problems of implementation in future studies. Smith (1975) explains how contrasting controlled experiments and less-controlled field experiments could be used to assess the influence of implementation problems on program effects. Lukas (1975) suggests that program evaluators might set criterion levels of implementation which are acceptable for the treatment, and analyze effects only in cases that exceed the indicated level. Finally, Lukas argues that implementation should be dealt with not just as a confounded variable to be controlled or eliminated, but as the subject of research: Just as we need to know which models are more effective, we need to know which ones can be easily and successfully implemented, why they can be, and how they can be.

Home Start

Since Home Start was not designed as a systematic comparison of different models of home-based intervention, the problems of implementation are different,

and perhaps less disruptive to interpreting findings, than those discussed above with regard to HSPV and Follow Through. It is still important to study the implementation of the program, however, in order to obtain an accurate picture of the treatments which actually accounted for the effects of the program, and in turn to provide more effective intervention strategies for future programs.

The final report on Home Start presented findings concerning the implementation of the Home Start projects (Love, et al., 1976). Significant variations within and across projects were noted in a number of areas. Some families received more frequent visits than others (as a result of, e.g., emergencies or illnesses) and home visitors spent different amounts of time on the various child activities. Similarly, some families participated in group activities more than other families. The number of families enrolled (and the per family costs) varied from project to project, ranging from 63 to 86 families, and $1,325 yearly per family to $2,505. Related to these cost variations were variations across projects in the number of specialists employed in various service delivery areas (e.g., speech therapist, educational therapist, nutritionist, social service coordinator, nurse). In addition, in-home supervision of home visitors, considered critical to the home-based program, was provided at only a minimal level in some projects, primarily because the necessary supervisory staff was not available.

Specific problems in the provision of services were also noted in the final report. Home visitors who had responsibility for more than 13 families were unable to visit families as frequently and regularly as visitors with lighter assignments, resulting in declines in measures of child development (school readiness and language development). The evaluators also reported

that home visitors with children of their own visited families less frequently than visitors with no children at home.

The age of the home visitor and the length of time she had been employed in the project appeared to influence the focus and content of her home visit. Older visitors spent more time on the child, and less on educating the parent about the child. On the other hand, the longer a visitor had been with the project, the more time she spent educating the parent, which is in line with the Home Start objective of emphasizing the parent as educator of her own children.

Contrary to what might have been expected, it did not appear that the availability of a specialist within a project had an impact on the amount of time spent on particular content areas during home visits. Thus, health was actually emphasized in home visits to a similar extent across projects with or without health specialists.

Section 6. Parent Involvement: Does It Increase a Program's Effects on Children?

Head Start and Home Start

Parent involvement has been widely touted as a key ingredient in compensatory education (e.g., Datta, et al., 1976; Karnes, 1973; Passow, 1974; Ryan, 1974), and has been an integral component of the Head Start effort (Mendelsohn, 1970). Parents' efforts to extend remedial activities to the home have been credited with increasing the magnitude and duration of developmental gains produced by Head Start classroom experiences (Mann, et al., 1976; White, 1973; Zigler, 1973).

Nonetheless, we still do not have a clear understanding of the extent to which and the ways in which parent participation in intervention programs augment their impact on children. As with most variables, there are many diverse kinds of parent involvement, and the causal process is complex, with a wide range of parent/program/child interactions occurring. Also, again as with most variables, methodological problems abound, probably the most common being that groups of parents who differed in their degree of involvement, also differed even prior to the program in many other respects. Thus, it is not clear whether any differences which show up in child effects are attributable to the different patterns of parent involvement, or to other differences in family and parent characteristics and parent-child relationships.

Scattered observations and findings are available from program evaluations, and from them a tentative sketch of some of the elements of parent involvement can be drawn (with an emphasis on the "tentative"). The critical factor appears to be establishing some kind of change in the parent's behavior

that will carry over to the parent's interactions with the child and other members of the family. Thus, parent education projects, which emphasize traditional classroom techniques of providing the parent with information, do not appear to be as effective in producing gains in the child's development, as do parent training projects, which emphasize the development of new parental skills (Bronfenbrenner, 1974; White, 1973). Modes of parent involvement that attribute a greater sense of importance and responsibility to the parental role appear to be most effective, even though the specific nature of the involvement may differ. White (1973) found that, within parent training programs, one curriculum did not seem significantly better than another, and professional teachers and social workers were no more effective in training parents than paraprofessionals. Parent participation, both in decision-making roles and in learner roles has been found to be associated with gains in child development measures, according to a 1972 study by MIDCO Educational Associates, and the extent of participation was more important than the type of participation. (See Mann, et al., 1976, for a summary of their findings). In reviewing findings concerning parent involvement in intervention projects, Bronfenbrenner (1974, p. 34) argues that "a home-based program is effective to the extent that the target of intervention is neither the child nor the parent, but the parent-child system." In line with this, he concludes that the younger the child is when parent intervention is initiated, the more substantial the gains that will accrue; parent intervention delayed until the time the child is school-aged does not appear to produce comparable gains.

Bronfenbrenner also cites evidence that when home visits and preschool programs are combined in certain ways, the effectiveness of the parent involvement might be undermined, perhaps because the parent's responsibility and status are diminished and overshadowed by the preschool program. Others have reported, however, that combination home-and center-based programs can be

effective (Lazar, et al., 1977). Much more research in this area is needed before the effects of such complex family/institution interactions can be understood.

An advantage of involving parents in the intervention process is that benefits have shown up in younger siblings of the children actually enrolled in the program. Bronfenbrenner suggests that the effectiveness of this strategy would be magnified if fathers and other family members were involved, although so far most projects have worked exclusively with mothers (White, 1973).

Parent involvement was the essence of the Home Start program, whose major goal was to enhance the mother's skills in dealing with her children at home. As indicated previously, the program was effective in producing short-term gains on a variety of measures, and Home Start and Head Start were judged to be equally effective (Love, et al., 1976). The evaluation of this program also showed that the dynamics of parent involvement defy easy description. Even though some home visitors spent significantly more time than others on educating the parent (rather than the child directly) they did not have a greater impact on either the parents or the children. The program evaluators pointed out the possibility that greater gains due to this added attention to the parent might show up over the long term, but no follow-up assessment was undertaken.[5] As with most other programs, few fathers were involved in the home visits, even though efforts were made to involve them.

In his review of home-based programs, Hess (1976) examined five features of parent involvement, and found that while they did not account for the large differences apparent among the programs, some relationships were dis-

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[5] A follow-up study of these Home Start families is being undertaken in 1977.

cernible between particular features and the impact of the program on children. The more a program concentrated on parents, the more substantial the IQ gains by the children, with one-to-one teacher/parent relationships being more effective than group teaching situations. Home visits were particularly effective. While no relationship was found between the type of curriculum used by the parents (e.g., verbal interaction vs. sensori-motor) and the magnitude of effects, more structured activities were more effective than less structured activities. The techniques used to train parents were rated according to degree of specificity, however, and no relationship with impact was found.

Follow Through

Parents have also been involved in decision-making and day-to-day operations in Follow Through. Interviews with parents showed a number of positive effects on parents' awareness of and attitudes toward their children's development, activities and school progress, as compared with non-Follow Through parents (Bronfenbrenner, 1974) Again, however, differences between Follow Through and control parents can not necessarily be attributed to program-related factors (e.g., the groups may have differed in education and other background factors). Factors developed from 1974 Parent Interviews included: parents' perception that school helped children; parent's perception that child was developing socioemotionally; parent's participation in Parent Advisory Council; frequency of parental visits to school; amount of parent-child interaction relating to school topics; and satisfaction with teacher (Stebbins, et al., 1975). These and the other factors identified were conceptually combined into four clusters of factors: optional factors, involvement factors, satisfaction factors, and parent locus (p. A-30). Follow Through

models differed in their scores on these clusters, as was to be expected since their approaches differed according to the role attributed to the parent in the intervention strategy. Comparisons across models are difficult to make, however, since models differ on a multitude of factors other than those relating to parental involvement, and within each model and site, research design does not allow conclusions about causal relationships between parental involvement and children's performance on outcome measures. Furthermore, parents' attitudes and involvement, as reflected on the various parent factors, do not necessarily coincide with specified model intentions regarding the parental role. Consider two models which particularly stressed the parent's role in the educational process: the Florida Parent Education Model and the Home-School Partnership Model. The former model showed high levels of PAC participation, parent-child interaction, school receptivity, and several other factors. The Home-School Partnership Model, on the other hand, did not produce high levels of parent involvement. Other Follow Through sponsors emphasize parent involvement in one form or another, even though it is not as central to the theories underlying their models.

The Handicapped Children's Early Education Program

Within HCEEP, home-based programs proved to be more effective than center-based programs (Stock, et al., 1976). Home based programs showed significant positive effects in four of the five impact areas--Personal-Social, Adaptive, Cognitive, and Communication--failing to register gains only in the Motor Skills area. In contrast, center-based programs produced a significant impact only in the Personal-Social area. The evaluators point out, however, that children in home-based programs probably were given more individual attention and instruction, which might in itself account for the differences between

the two kinds of programs. In addition, it was found that children whose parents carried out prescribed activities on a daily basis gained more in those growth areas then children whose parents carried out these activities on a less than daily basis. The pattern was reversed, however, for the communications area.

Television Programs

Television viewing clearly can be a deterrent to parent-child interaction, to the extent that it discourages communication or even physically separates children from their parents. Bronfenbrenner (1974) argues that parental involvement in the child's television viewing could augment developmental gains, and advocates the coordination of programming with home visits and group meetings of parents. Research on such strategies has not been undertaken, but some findings pertinent to parent involvement were reported in the "Sesame Street" evaluation reports. As part of the research strategy, some families were encouraged to watch the program, and others were not. It turned out that children who watched more frequently, gained more from the program. In addition, however, the act of encouragement itself was associated with gains. Ball and Bogatz (1973) suggested that in encouraged families, the child's mother was more likely to view the program and discuss the material with the child. Children who watched the show the most tended to have mothers who watched with them, and who had higher expectations for their children (Ball & Bogatz, 1970).

Day Care

Many day care programs make it difficult (both intentionally and unintentionally) for the parent to gain access to their facilities and caregivers

(Fein, 1976). This problem is compounded by working parents' lack of time to visit the day care centers or homes in which their children are enrolled. Yet closer contact with the staff and activities of their children's day care programs is desired by many parents, and encouraged by child development researchers and advocates. The actual effects of parent involvement in day care have rarely been researched systematically, however.

Concerns about parent involvement in day care stem from different sources than do similar concerns relative to compensatory education programs. While the involvement of parents in poverty programs has been encouraged as a means of including those parents in the democratic process, providing them with increased economic support, and improving their parenting skills and consequently the child's home environment (Fein, 1976), parent involvement in day care programs has been justified primarily on other grounds. The push to involve parents in the surrogate care of their children clearly reflects the prevalent fear that day care might be harmful to infants and young children. It focuses mostly on minimizing any possibility that the family's child rearing function and responsibilities will be taken over by other societal institutions, and on maximizing the congruence between the particular needs of a child and family, and the day care services obtained by that child and family (Fein, 1976). With regard to the first focus, recall Bronfenbrenner's complaint that day care is too often presented as a substitute for rather than a complement to parental care. The second point stresses parent involvement as a means of becoming an informed consumer--an accomplishment which is not easy with regard to day care, since infants and very young children are incapable of reporting the conditions of their care, and parental access to the day care facilities is limited by a variety of factors. Furthermore, the parents'

need for an accurate picture of the care being offered their child relates to more than the general quality of the program, although clearly that is crucial. Most day care researchers favor the viewpoint that there is no "best arrangement" in day care, and that different families may be suited to different styles and forms of care (e.g., home care vs. center care, large group vs. small, simple caregiving services vs. comprehensive health, education, and welfare services, etc.). In addition, parents are likely to prefer programs and caregivers with values and objectives similar to their own.

Another common premise is that parent involvement will facilitate the child's adaptation to the day care environment, and in particular help alleviate emotional problems relating to the stress of separating from the parent. The child's reactions to such separations are probably shaped by many factors --the importance of one or two stable and continuous caregivers has been cited earlier in this paper--and the transition from home to day care might be smoothed by regular interaction and communication between parent and caregiver. Unfortunately, little relevant work has been done which sheds light on "the specific effects of parental presence and contact upon the child's ability to cope with the day care situation" (Fein, 1976, p. 45), or on how parent involvement in day care affects children, in general.

Heinicke and Strassmann (1976) advocate a different approach to parent involvement in day care. With an eye toward the same goals described above--to facilitate the child's adaptation to the day care situation, and the child's development in general--they urge that emphasis be given to the provision of educational and social services directly to the families of children enrolled in day care. They review research literature which suggests that two types of family intervention are likely to enhance the development of the day care

preschool child: "Training to promote the verbal interaction of parent and child around a cognitively challenging task, and specific forms of social work to enhance the competence of the parent as a person and in their interaction with their child" (p. 24). They justify the use of day care of the child as a vehicle for introducing these kinds of interventions primarily on practical grounds. Specifically, many families who can benefit from such services are not easily accessible, and their contact with day care programs provides that access. Furthermore, if parents trust the day care staff, they are more likely to cooperate with the home visitors and social workers. In addition, Heinicke and Strassmann indicate that the addition of the family intervention component has been shown to increase the length of time for which the child is enrolled in the day care program.

Note that Heinicke and Strassmann stress day care as the point of access to the family. It is the family, rather than the day care home or center, which they see as the locus of significant influences on the child's development. They arrive at this position in light of evidence on the effectiveness of parent-child interactions as a means of facilitating development, and in the absence of data demonstrating substantial effects of day care on the child's development. They do not rule out, however, the possibility that such effects do occur, and indeed urge the study of children in day care, especially those enrolled in centers for long periods of time.

Section 7. Characteristics of Children: The Effects of Programs on Different Children

The impact of a program may differ substantially from one child to another. Typically, even in programs judged to have no impact on the group of children enrolled as a whole, children can be found who show significant gains. Such findings are generally more confusing than enlightening, however, since the various characteristics, abilities, and experiences which contributed to the gains can rarely be identified and sorted out. The problem is especially great if differences between the effects on individuals relate to variables which are difficult to measure, control, or experimentally manipulate (such as attitudes and motivation, or child/parent and child/teacher interactions). Background characteristics of children, such as socioeconomic level, sex, race, and ethnicity, are more easily identified and measured. Although systematic examination of these characteristics has not been undertaken in many major program evaluations, some findings have been reported, and they will be reviewed in this section.

Differences in the Degree of Economic Disadvantage

Most of the programs covered by this review were developed to deal with problems of economically disadvantaged children. There has been and will continue to be considerable debate concerning how Federal resources are allocated to various target groups, but such issues are outside the purview of this paper. Of more immediate concern to a review of impact findings, however, is the frequently heard question: How does a program's impact vary across children with different degrees of economic disadvantage?

Unfortunately, a satisfactory answer to the question cannot be provided

at this time. Only fragmentary evidence is available, and it is drawn from programs which have different purposes, and whose target groups vary both within and across projects, on a score of social, ethnic, economic, and physical dimensions. Typically, a program is developed to deliver particular services to a general category of children and families in need of those services, and systematic study of socioeconomic differences within that category is not undertaken. The concept of "disadvantage" itself serves as an umbrella for a variety of factors, such as income, ethnicity, social class and home environment, crisis and equity (White, 1973). There is evidence that variation (e.g., in child rearing practices) may be greater within social status levels than between levels, indicating the need for more research focused on process variables rather than status variables (Shipman, 1973). Furthermore, because comparisons between socioeconomic or ethnic groups are easily misinterpreted, and even without misinterpretation can generate political controversy, they are often deliberately avoided by program planners and evaluators. Given such constraints, it is not surprising that few attempts have been made to examine interactions between program impact and degree of disadvantage, and that the few conclusions that have been offered have been severely limited by methodological problems.

A reasonable assumption underlying compensatory education is that the children who are in need of it will benefit more than those who are not in need of it--i.e., disadvantaged children will gain more than children who are not disadvantaged. Indeed, on the other side of the coin is the possibility that special programs for low-income children could even have negative effects on "advantaged" children enrolled along with disadvantaged children, although recent evidence does not support this fear (Seitz, et al., 1976). A corollary

of this premise is that the more disadvantaged the child is, the greater the gain should be from the intervention. Some of the evidence which is available indicates, however, that this is not what happens, and that, instead, children from the most deprived social and economic backgrounds show the smallest gains and lose their gains the most quickly (Bronfenbrenner, 1974; Herzog, Newcomb & Cisin, 1974). Herzog et al. classified low income children into high and low socioeconomic groups (relative to each other) and found that an experimental preschool program benefitted the higher group significantly more. The lower SES children, most in need of compensatory education, gained less (in IQ) from the program and retained fewer of their gains. Those researchers concluded that the teaching method used in the program, derived from the traditional nursery school, were inappropriate for children from very low income families. Indeed, there is some evidence that highly structured preschool programs are more effective with the more disadvantaged of children from lower socioeconomic levels (Bissell, 1973). Unfortunately, an intervention strategy that appears to be especially powerful--family intervention--appears to be least feasible for logistical reasons with the most disadvantaged families (Bronfenbrenner, 1974; White, 1973).

The conclusion that, within the lower socioeconomic levels, compensatory education has a lesser impact on the more disadvantaged children, cannot be accepted as the last word, however. A few findings to the contrary have been reported. Bissell (1973) noted that among Follow Through participants, children from families definitely below the OEO poverty level gained more than did those from families above the poverty line or for whom the relevant information was unavailable. Similarly, the ABT IV-A report indicated that "Head Start graduates have commonly gained as much from their Follow Through experience as have non-Head Start children. In two of the models, Head Start children have

have done substantially better. Seven models experienced more success with their lowest-income sites than with their highest-income sites" (p. 6).

Datta, McHale & Mitchell (1976) reported mixed findings with regard to relationships between socioeconomic status and gains in Head Start programs. In line with Herzog's data, the lower the educational level of the mother (a component of socioeconomic status) the lower was the child's ability to learn a new task. This finding was not replicated in a later study, however. On the other hand, there was a consistent but not statistically significant tendency for the most disadvantaged children to gain the most. Datta, et al. concluded that within the narrow range of socioeconomic levels included in the program, there was no consistent relationship between SES and program impact.

Evaluation of "Sesame Street" showed no significant differences in gains between disadvantaged and advantaged children who viewed the program frequently (Ball & Bogatz, 1970; Ball & Bogatz, 1971). Indeed, disadvantaged children who viewed the program frequently made greater gains and achieved higher scores than middle class children who viewed infrequently (Ball & Bogatz, 1973). It has been argued that more middle- than lower-class children view "Sesame Street," and that the net result may be a widening of the educational achievement gap between the two groups (Cook, et al., 1975). The representativeness of those viewing data has been questioned, however, along with the usefulness of the "gap" issue (Ball & Bogatz, 1975).

Thus far, no direct research efforts have been made to determine whether there are differential effects of day care on children from families with different levels of income (Bronfenbrenner, et al., 1976). Heinicke and Strassmann (1976) relate the findings of one recent study comparing heterogeneous and homogeneous day care groups (with respect to social class

and age). The data suggest the possibility that in the heterogeneous groups a more "mutually supportive environment in which adults tended to be sensitive and responsive" may develop, along with higher levels of interaction, cooperation, and imaginative role play among the children. Other contributing factors besides degree of heterogeneity (such as child and teacher characteristics) could not be ruled out, however.

In sum, there is some indication that children from very economically disadvantaged (as compared to moderately disadvantaged) families are particularly hard to reach with the kinds of intervention programs that have been undertaken thus far. There is simply too little relevant research, however, to draw any firm conclusions about how the degree of a child's disadvantage relates to a program's impact.

Sex Differences

Findings relating to sex differences in program impact are scarce, inconsistent, and difficult to interpret. Failure to find differential effects on boys and girls has been reported for Head Start classes (Datta, McHale, & Mitchell, 1976) and for "Electric Company" (Ball & Bogatz, 1973) and "Sesame Street" (Ball & Bogatz, 1971). Sex differences in gains have been found, however, in a number of other cases.

When sex differences do show up, they do not always fall in the same direction. In some intervention programs, girls have profitted less than boys (e.g., Abelson, 1974; Herzog, et al., 1974). Miller & Dyer (1975) found that over a three-year period following Head Start classes, girls showed greater decreases in IQ than did boys. Two possibilities were raised: that the Head Start experiences had detrimental effects on the girls, or that for the boys the program managed to ward off progressive decrements that would have occurred

without intervention. Evaluation of the Handicapped Children's Early Education Program (Stock, et al., 1976) uncovered sex difference in only one area (cognitive). The program had a greater impact on boys, in this area, than on girls.

In contrast, girls enrolled in Parent-Child Centers scored slightly but significantly higher than did boys in the program (Holmes, Holmes, Greenspan & Tapper, 1973). Seitz, et al. (1976) reported evidence that Head Start girls were more responsive to the effects of intervention than boys, suggesting that the factors causing low-income boys to do poorly in school might be less easily countered by preschool intervention than the factors causing girls to do poorly. Similarly, in the ETS longitudinal study of Head Start children (Bridgeman & Shipman, 1975) girls adapted more readily to the school setting, and sustained their early interest in school work into the primary grades, while boys found entry into grade school more disruptive.

What can be concluded about sex differences, then? First, there is general agreement that sex differences in program effects are real and likely to occur in many intervention efforts. Thus, in evaluating children's programs it is important to undertake separate analyses by sex, perhaps within other subgroups, such as urban and rural, or black and white (Bridgeman & Shipman, 1975).

But conclusions about the structure and etiology of sex differences cannot be derived from the available data. Nor will useful answers be obtained simply by accumulating findings of the type described above, and lining them up against each other to determine which sex has the most advantages. Rather we need studies designed to identify the processes which underlie the attitudes boys and girls bring with them to the programs, and the experiences they

have in and out of the programs which cause, moderate, or amplify their gains and losses. It is possible, for instance, that

> boys and girls respond differently to exactly the same techniques; it is also possible that program implementation, especially with respect to teacher behavior, takes on a different character for the two sexes (Miller & Dyer, 1975, p. 133).

Once again, we need to do more than study sex differences as inputs and products of intervention--we need to find out more about what is happening to the child in the program that bears on these differences.

Other Characteristics

It was originally intended that this review include program impact findings bearing specifically on bilingual children, handicapped children, and ethnicity and race. The major evaluation reports do not provide sufficient information, however, to support separate sections on these target groups.

The evidence reviewed thus far makes it clear that interactions between characteristics of children and characteristics of programs can account for differences in program impact. Like socioeconomic level, however, race and ethnicity are general categories which may afford researchers easy identification of some salient differences between specified groups of children, but they may shroud an equivalent number of differences among children within the individual groups. It is likely that children with different ethnic backgrounds will respond differently to some programs, but given the complexities that have emerged with regard to levels of disadvantage and sex differences, it is unlikely that such differences in program impact will be clear and consistent. In fact, systematic comparisons of racial or ethnic groups have not been undertaken in many evaluations, either because of design or sampling limitations, or for social and political reasons.

Among the references reviewed in this paper only a few report relevant findings. Datta, McHale & Mitchell (1976) indicate that among children enrolled in Head Start programs in the late '60's, ethnicity, urbanicity and geographic region were unrelated or inconsistently related to initial differences in performance levels and to differences in gains made during the programs. Differences in IQ gains by black children and Mexican-American children which were evident in one year, were not found in another year. Non-urban children registered greater gains on some measures than urban children, but initial scores also differed, hindering interpretation of these data. Differences found between Northern and Southern Head Start program effects were judged to stem primarily from differences in program variables (such as the degree of structure in the classroom) and child characteristics (such as age) which were confounded with the geographic regions.

No substantial differences were found between "Sesame Street's" effects on whites and the program's effects on blacks, although the evaluators acknowledge that the "original sampling procedures were not designed to produce black-white comparisons" (Ball & Bogatz, 1971, p. 11).

Among minority children, there are those who speak languages other than English, and speak English poorly or not at all. While considerable Federal support is being given to educational programs oriented toward bilingual children, only one of the evaluation reports reviewed here reports data of any relevance to this issue. In the first year evaluation of "Sesame Street", Spanish children who viewed the program frequently had the lowest scores at pre-test, but the highest at post-test, gaining "almost incredible amounts" (Ball & Bogatz, 1970). It should be noted, however, that the sample of Spanish-speaking children was small and the children varied in the extent to which they were exposed to English.

Similarly, data concerning handicapping conditions as factors in early childhood intervention are almost nonexistent among the reports reviewed here. It is clear, however, that preschool programs can benefit intellectually and physically handicapped children (Karnes, 1973; Stock et al., 1976). Gains reported for the Handicapped Children's Early Educational Program were made by children with five of six handicapping conditions: the educable mentally retarded, the learning disabled, the emotionally disturbed, the speech impaired, and the hard of hearing. As would be expected, children with different handicaps gained in different ways. For instance, the educable mentally retarded showed gains in all of the growth areas delineated by the program, with the exception of motor skills. The learning disabled showed significant gains in the personal-social and adaptive domains; the speech impaired in the personal-social, adaptive, and motor skills; and the hard of hearing only in the communication area (Stock et al., 1976).

Section 8. The Timing of Intervention: Do "When", "How Long", and "How Much" Make a Difference?

Questions concerning the timing of intervention are fundamental to any consideration of programs for young children. The questions themselves are straight-forward and easily formulated, but the issues they touch on are complex. What is the best age on which to focus? If benefits are shown for preschoolers, can bigger gains be produced by starting earlier, with infants--or even earlier, through prenatal maternal education? Or are program efforts wasted prior to a certain age? If a one-year program is good, is a three-year program better? If a four-hour-per-day, two-days-per-week program is good, is an eight-hour/four-day program better? Will program gains be lost unless they are solidified or bolstered by follow-up programs? If follow-up programs are required, how soon and how long? These are but some of the questions that have been raised, of course, but they illustrate the kinds of timing problems facing program planners.

For the purposes of this report, issues pertaining to the timing of intervention have been divided into three general sections: (1) the child's age at intervention, (2) the amount of intervention (both duration and intensity), and (3) the continuity of intervention. As with most of the questions addressed in this paper, complete answers are not available. Let us examine, however, the evidence which is available.

Age of Child When Intervention Begins

Many of the children's programs examined in this paper are designed for young children, that is, children younger than school-age. In addition, many of them involve the upper half of this age range, i.e., children three to five years of age. When a program's impact is considered, a question which naturally

arises is: Would the impact be different if the children were younger or older at the time of entry into the program?

As with other child characteristics, any relationships observed between age at entry and program effects may stem directly from developmental differences, or indirectly from changes induced in teacher and program characteristics. Concrete evidence of such an effect is provided by Love, et al (1976), who reported that the frequency and duration of the home visits in the Home Start program were affected by the target child's age. It turned out that families with older children were visited less frequently, but for longer periods of time. The evaluators surmised that this resulted from the older child's capacity to participate in the activities for a longer continuous stretch of time.

Returning to the question of age and program impact, there is in particular an inclination for researchers and program planners to assume that the earlier the intervention begins, the better the outcome will be. This viewpoint evolves both from developmental theory concerning the effects of early experience and from pressures relating to more pragmatic concerns, such as the working mother's desire for suitable child care, and the school's desire to avoid the inconvenience of dealing with children who begin school already behind their peers (Anderson, 1973). Furthermore, it is a premise which can be reinforced both by success and by failure to achieve a program's objectives. If positive impact occurs, there is always the possibility that earlier intervention will augment the beneficial effects. If no positive impact occurs, it may be because the children were not reached early enough in life.

Whatever the reasons for the premise that earlier intervention is better, does the evidence support it? In brief, sometimes it appears that earlier

intervention is more effective, but it is by no means always the case. Findings have been reported both that very early intervention (i.e., in the first two or three years of life) is effective, and that it is more effective than later intervention (Horowitz & Paden, 1973; Karnes, 1973; Palmer, 1976; Ryan, 1974). These findings pertain primarily to cognitive achievement and performance. Evidence of higher IQ gains by the younger children in two years of Head Start programs was also reported by Datta, McHale & Mitchell (1976), but a third year's data failed to bear out this pattern. In addition, task-specific patterns of gains were evident: younger children gained more in the area of social adjustment, but older children gained more in specific skill areas, such as numerical. The authors point out that the data do not support the across-the-board version of the earlier-the-better premise. They posit instead that interactions occur between age and specific program experiences, such that the age of the child determines not so much the general size of gains, but rather the type of gains.

Task-specific gains were observed also among children who viewed "Sesame Street." While older children scored higher at pretest, three-year-olds who were frequent viewers made greater gains and scored higher at post-test than some of the less frequently-viewing groups of four- and five-year-olds (Ball & Bogatz, 1973). However, different patterns of gains occurred for different tests. Older viewers learned better than younger viewers with respect to goals that were taught indirectly; younger children made greater gains in specific knowledge and skills (Ball & Bogatz, 1971). Higher gains by younger children (first and second grades versus third and fourth grades) were also reported in the evaluation of "The Electric Company," but again the pattern of gains may have been in part an artifact of the selection of program material and tests (Ball & Bogatz, 1973). The evaluators suggest that a "ceiling effect"

may have obtained, with older children having mastered the material and having little to learn.

Other reviewers have also concluded that there is little support for the view that program success will be enhanced by starting with younger children (Anderson, 1973; Bronfenbrenner, 1974; Love et al., 1976; White, 1973). Bronfenbrenner reserves this conclusion, however, for preschool programs in group settings. With regard to intervention in the home involving the parent-child relationship, he reports evidence that earlier intervention may indeed be more effective. He argues that initiation of intervention during the first three years is more effective, because "the dependency drive is at its height and the mother has not yet developed firmly established patterns of response, or lack thereof, in relation to the child in question" (p. 35). On the other hand, Love, et al. (1976) found that there was little difference in program impact related to whether the child was three-years-old, or four-years-old at entry into the Home Start program. Bronfenbrenner does specify, however, that the key criterion for effective early family intervention is that the parent be involved directly in activities fostering the child's development, and it is not clear to what extent the projects he reviews and the Home Start activities are comparable in this respect.

Karnes (1973) suggests that early intervention (three years or younger) may be especially effective with intellectually handicapped children. But no clear support for this view was provided by the data collected from the Handicapped Children's Early Education Program. Younger children gained more than older children in one domain (communicative), but older children gained more than younger children in another domain (adaptive) and no differences between age groups showed up in three domains (Stock, et al., 1976).

In contrast to compensatory education, attitudes regarding the appropriate age for entry into day care have been shaped by conflicting pressures. On the one hand, when the emphasis has been on the educational or enrichment aspects of the day care experience, the "earlier-the-better" philosophy has had its advocates here as well as in compensatory education. In addition, in so far as needs for day care are related to the employment of the parent, they may be just as pressing when the child is an infant or toddler as when the child is older. On the other hand, concerns that day care may be harmful to the development of the child-parent bond, or to other aspects of development, have focused more intensively on day care for infants and very young children. Such fears relate both to the early separation of the child from the parent, and to the longer period of time in which the child is ultimately in a day care situation.

Thus far, however, there is no clear evidence that entering day care early in life (or at the very beginning of life) is either harmful or helpful to intellectual development (Ricciuti, 1976). At the same time, experts do advise that a child not be placed in day care until after at least the first month of life, in order to lessen the risk of infection and to allow the parent time to initiate a relationship with the infant (Kagan, 1976). In addition, more structure and lower child/staff ratios are generally recommended for infants and toddlers (e.g., Meyer, 1977).

Actually, the available evidence indicates that it is towards the end of the first year that separation from the parent provokes the most anxiety and stress. Thus, children first placed into a day care situation when they are between 8 and 15 months of age may have more difficult experiences than those placed earlier or later in life (Kagan, 1976; Ricciuti, 1976).

Amount of Intervention

Duration. Overlapping, but also distinct from the question of age of entry into a program, is the question of the optimal length of an individual program. The question arises not so much out of scientific curiosity, as out of pressing social need. The positive impacts of many programs have been disappointingly small, if present at all, especially over the long term and over any but the most narrow spectrum of outcome measures. Many such failures lead those who have invested time and effort into the programs to conclude that whatever was being done, was not being done for a long enough time to produce long-term, stabilized gains (e.g., see Karnes, 1973). Furthermore, the premise that longer programs will lead to greater gains may seem reasonable at first glance, in light of the pattern of long-term effects typically found for compensatory education programs. Recall that substantial gains often show up during treatment but usually fade a year or two following termination of the preschool program. Such a finding might imply that had the same program continued longer, the gains would have been greater and/or more lasting. Recall also, however, that the washing-out of early gains from preschool program experiences has proved to be resistant to many of the counter-measures employed to prevent it. Thus, the evidence already reviewed with regard to long-term effects provides a beginning answer (on the negative side) to the question about program length: Gains are not necessarily maintained or solidified simply by extending the length of the program.

When the question of program length is considered directly, the general conclusion is also that there is no clear relationship between program length and the size of program effects (Bronfenbrenner, 1974; White, 1973). While exceptions to this rule have occurred in a small number of projects, in most cases longer participation in a preschool program does not lead to greater,

more enduring, or cumulative gains (Bronfenbrenner, 1974). White suggests that there may be important interactions between child characteristics and the length of time required for gains, so that some children (e.g., disadvantaged boys) may have to be involved in a program for a longer period of time to show the same gains achieved by others in a shorter time.

Findings were reviewed in the preceding section that indicated the possibility that age of entry may be more of a determinant of program impact when family intervention is a key component of the program. Similarly, Bronfenbrenner (1974) concludes from his review of children's programs that the longer family intervention programs are continued, the greater the benefit to the child (providing the intervention began in the first few years of the child's life.) Again, however, this hypothesis is not corroborated by the Home Start evaluations, which found very few differences in outcome for children and mothers who were in the program for two years and those who were in for one year (Love, et al., 1976). On the other hand, children who were enrolled in Parent-Child Centers for more than several years, had higher mean scores than children enrolled for less than several years (Holmes, et al., 1973).

Some studies of day care programs have revealed differences between children who have been in day care since infancy and those who were first enrolled after three years of age, but the differences were not dramatic, nor is it clear whether they related to the day care experience per se, or to differences in family attitudes and characteristics (Heinicke & Strassmann, 1976). Data collected so far do not consistently support the viewpoint that the longer the child is in day care, the greater the effects (positive or negative).

As with age at entry, relationships between length of participation and

program impact may be task specific. For instance, length of participation in the Handicapped Children's Early Education Program was not related to the amount of gain in the Personal-Social and Adaptive domains (Stock, et al., 1976). In fact, less of an impact was apparent among children enrolled for six to seven months between pretest and post-test, than those enrolled for four to five months, indicating that the initial impact may have worn off (or the difference may have stemmed from other confounded factors). But scores in two other domains (cognitive and communicative) were significantly higher at post-test only in the group of children enrolled for the longer period of time. Stock, et al. point out that this pattern is consistent with the HCEEP program approach, which involves an initial focus on personal-social relations and adaptive skills, and a subsequent emphasis on cognitive and communicative abilities.

The selection of curricula and tasks presents a special problem in the case of televised programs. As Stein and Friedrich (1975) point out, in television the "lack of control over previous viewing makes it impossible to build learning sequences. Each segment must be independent rather than build on previous content" (p. 239). Thus, it is not surprising that the few advantages shown by children who had viewed "Sesame Street" for two years rather than one, were in the goal areas new to the second year of programming (Ball & Bogatz, 1971). In most other areas, however, a ceiling effect was apparent, with frequent viewing for two years leading to little additional gain (Stein & Friedrich, 1975).

In conclusion, simply increasing the length of a program does not necessarily increase the program's impact. Generally, when a program has a significant positive impact, as gauged by the kinds of outcome measures typically used, it shows up after a relatively short period of time and is not aug-

mented by additional activities. There have been some exceptions to this tendency, and particular subgroups of children and program goals may require longer minimum treatment lengths than others. In certain programs, such as family-centered ones, children appear to benefit more from extended periods of participation, and in other programs, such as those that are televised, extended treatment length appears to be especially ineffective.

The issue of program length was addressed in the early Westinghouse study, which indicated that however weak the effects of those full-year Head Start programs, the effects of the shorter summer programs were nil. Reanalyses of these data and other studies have modified this finding somewhat, however, and suggest that some short term summer programs may be effective, in some respects, for some children. (See Mann, et al., 1976, for a discussion of the impact of summer and full-year Head Start programs).

At any rate, a lengthy period of intervention offers no magical route to dramatic program impact. But the issue is still open, and in particular there is a need to determine which children and which areas of intervention benefit most from extended programs.

Intensity. The amount of intervention can also be measured in terms of the intensity of the treatment. That is, within a given duration of a program, how often and for how long does treatment occur? For instance, how many hours per day, or how many days per week does a child participate in program activities? Clearly, such measurements will have to be restricted primarily to direct treatment, e.g., actual time spent in a center, direct contact between program staff and children and families, or actual time of televised presentations. Carry-over activities, such as informal parent-child interactions focusing on program-related materials or ideas, would be much more difficult to assess accurately.

Good data are not available which pertain to differences in the intensity of center-based preschool programs, such as Head Start. The intensity of treatment seldom varies dramatically from one program to another, and few systematic studies have been undertaken of the effects of different schedules. The small amount of information available in this general area relates primarily to home visits and television programs, where by necessity treatment is delivered relatively infrequently, and thus there is more room for variability.

Evaluation of Home Start impact showed that the amount of time spent during a home visit on a particular program component was not associated with positive parent and child outcomes (Love, et al., 1976). For instance, more than a quarter of the total visit time was reserved for activity fostering school readiness, but home visitors who consistently spent more time than others on this objective did not achieve better results. Thus, in at least some respects, there is no clear relationship between intensity and impact. On the other hand, the evaluators report that major variations in the frequency and duration of the home visits themselves were related to different child and parent outcomes. When home visitors came to the homes fewer than three times per month, the language abilities of the children developed more slowly. Similarly, when the visits consistently lasted less than an hour-and-a-half to two hours, declines in development were noted.

A clear intensity effect was apparent in the evaluation of "Sesame Street." Children who viewed frequently showed much greater gains than did children who viewed only infrequently (Ball & Bogatz, 1970). In contrast, these evaluators also found that gains in reading ability due to viewing "The Electric Company" occurred whether the time for viewing was typically taken from or added to

regular classroom instruction on reading (Ball & Bogatz, 1973). While this did not constitute a variation in the intensity of the program per se, it showed that increased time in the combined instruction delivered by the program and the teacher offered no particular advantage.

An attempt was made to assess the effects of different levels of participation in Parent-Child Centers. It was found that urban children, who spent fewer hours per day and days per week in program activities than did rural children, also showed smaller gains (Holmes, et al., 1973). But this is rather indirect evidence, and the difference between the groups may have stemmed from many other differences in the experiences of urban and rural children, which were not related to levels of participation. The evaluators also made a more direct effort to examine levels of participation. They asked each Parent-Child Center to rate each child as high or low-involved, according to whether the child's attendance in the program was consistent and sustained, or sporadic and intermittent. No clear trends emerged. The evaluators note, however, that centers varied considerably in their scheduled activities, and subsequently also in the criteria they used to determine high and low involvement. For instance, a child who consistently was present the one or two days per week offered by one program was rated as highly involved, but a child who came two days per week to a program which offered activities five days per week was not rated as highly involved.

Heinicke and Strassmann (1976) point out that in the absence of substantial research on day care (particularly longitudinal research), much of the thinking regarding day care has been based on preschool education research. They caution that it is risky to generalize these findings, which often pertain to half-day programs, to all-day day care. Whether the length of a child's

day care day has any bearing on the program's impact on the child, however, has not been established. Recall that none of the studies of day care (including all-day care) has found dramatic effects on the child, so it is unlikely that the number of hours spent in day care each day will turn out to be critical, at least in the areas measured to date. The question remains open, however, until the relevant studies are undertaken.

In conclusion, as with duration, it does not appear that putting more into a program necessarily causes more to come out. The evidence is meager, however. For many Federal programs, we simply lack data on the relationship between gains by children and the intensity of treatment, and consequently no conclusions can be drawn. The evaluation of Parent Child Centers failed to find a positive relationship between intensity and effects, but since the findings were based on questionable ratings, the possibility that such a relationship did exist cannot be ruled out. On the other hand, in light of the findings pertaining to program length (which show only a weak relationship at best between amount of treatment and impact) it is unlikely that small variations in intensity will affect program impact. Intensity is measured on a continuum, however, and some indications that it is a determinant of program impact have been evident at the extremes of the continuum where more substantial variations are possible. Thus, in programs where direct contact with the child occurs relatively infrequently (e.g., home-visiting programs such as Home Start, and televised programs such as "Sesame Street") variations in the intensity of contact have affected child gains. Presumably there is a minimum amount of program-child contact below which the impact of the program on the child is lessened. Not surprisingly, children who rarely watch an educational television program, or who see a home visitor only once or

twice a month, benefit little. In most center based programs, such as Head Start, children participate for sizeable portions of the day and week, so it seems less likely that any of the programs would fail to meet the minimum level of intensity hypothesized above. At the other end of the continuum would fall programs which totally or almost totally involve children in different ecological settings, such as residential institutions (i.e., program-child contact is virtually continuous). There are cases in the literature where such intense program experiences have led to particularly large gains. (For example, see Bronfenbrenner's, 1974, discussion of the Skeels study of mentally retarded children, who made great gains after being placed at the age of two in the care of retarded female inmates of a state institution, and the Heber study of black infants in Milwaukee, who made dramatic gains after spending most of their waking hours in a special center, where highly trained teachers were responsible for their total care.)

The available findings are sparse, and they are restricted primarily to measures of intellectual status and achievement. More information about the effects of different levels of intensity is needed, particularly with respect to center-based preschool programs and day care programs. While it is unlikely that the small variations typical of such programs will turn out to be important, it is possible that a program's effects may change if the schedule of activities were altered substantially (e.g., cut from five full days per week to a few hours, two or three times per week.)

Continuity of Intervention

In the two preceding sections, it was concluded that the magnitude of a program's impact on children is not easily increased simply by starting intervention at a younger age, or by increasing the amount of intervention within

that program. In this section, a third factor is examined--the continuity of intervention. What are the effects of a sequence of intervention programs?

Consider the more typical case first, however. The child graduates from an experimental intervention program and enters a regular school program. As indicated earlier, there is a general tendency for any gains attributable to the preschool program to wash out by the early elementary school years. A common explanation for this finding is that public schools do not provide the kind or level of stimulation and assistance necessary to shore up, much less boost, any gains realized at the preschool level (Bissell, 1973; Horowitz & Paden, 1973). Miller and Dyer (1975) point out that many observers have agreed that "no program should be expected to function as inoculation which would protect children indefinitely from the deleterious effects of unstimulating environments" (p. 2).

Are graduates from special preschool programs bored and frustrated upon entering public school? Ball and Bogatz (1971) found that when frequent viewers of "Sesame Street" entered school they were rated by their teachers as better prepared than non-viewers. They reportedly adapted well to the school activities, and showed no special inclination toward boredom or restlessness. On the other hand, Bronfenbrenner (1974) reports findings that children in control groups show larger increases in IQ after entering school than do children who have participated in experimental preschool programs. The explanation advanced is that the control children receive, upon entry into school, additional cognitive stimulation that the experimental groups have already experienced. Seitz (1976) found that Follow Through graduates (girls from one cohort) expressed negative attitudes toward school to a greater extent than did non-Follow Through children. The Follow Through children had consistently better academic per-

formance, however, their attitudes notwithstanding.

Can gains from early intervention programs be protected by subsequent intervention programs? Most such efforts have involved providing compensatory education in the school, since as Horowitz and Paden (1973) put it: "It seems only logical that subsequent educational experiences of children in experimental programs would play a role in whether gains are maintained or increased" (p. 387). However, some (e.g., Bronfenbrenner, 1974) have suggested that such intervention must touch on the child's home and environment as well in order to be effective.

As we have already seen, large gains over the long term have been few and far between. Furthermore, in many cases gains did not occur even when the children went from experimental preschool programs directly into other experimental programs. Even with Follow Through, which was designed specifically for this purpose of continuing intervention, few substantial long-term gains have been reported. A finding reported by Datta, McHale and Mitchell (1976) points up the complexity of the issue of sequential experiences. They report that children with no previous Head Start experience and children with lengthy previous Head Start experiences showed greater gains on certain measures of progress in Head Start than did children with small amounts of previous Head Start experience.

On the other hand, some evidence has been cited that continuing intervention into the elementary school years does sustain gains made by children (Miller & Dyer, 1975; Ryan, 1974; Zigler, 1973). The evidence is scanty, however, and it sheds little light on the issue of continuity between programs. For instance, how similar should teaching styles, curricula, and materials be across two sequential programs? As Miller and Dyer (1975) point out:

> The problem of continuity of methods is not trivial. Education is not a series of isolated learning sessions but a continuous process in which each child accumulates his or her own history of expectations and habits as well as knowledge....A child whose first experience with school consisted of frequent group drill and who suddenly found herself in a discovery learning classroom might need to discover, before anything else, that all the behavior patterns which worked so well previously...were no longer functional. Depending upon home environment, social class, and rearing practices, these factors may be more important for some children than for others (pp. 135-136).

Unfortunately, it would be extremely difficult to investigate the kinds of questions raised above by varying sequences of programs. Too many combinations are possible, and the logistical and managerial problems involved in controlling the children's experiences in the programs over long periods of time would be enormous (Miller & Dyer, 1976, p. 136).

In sum, little is known concerning the effects of providing sequences of intervention experiences to the child. Gains do not appear to be easily sustained or increased by following up programs with additional intervention experiences. Furthermore, systematic examination of various combinations of sequential curricula and teaching techniques appears to be beyond the scope of most current research efforts.

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